



ATARI 130XE GAMES BOOK



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ARRANGEMENT OF PROGRAMS

All the programs have been classified, explained and set out in an easy to read and enter format, with further programming suggestions and enhancements. We hope you enjoy this book and games within and continue to get the 'best' for and from your ATARI 130XE.

In the programs throughout this book, spaces have been used to aid readability. These have been placed between reserve words like PRINT, FOR, GOTO, GOSUB and between the characters in strings. It is not necessary to put them between reserve words most of the time however occasionally the machine will demand it. So if you type in a line omitting the spaces and the machine rejects it with a error, retype it with the spaces. The only time you should type a space inside of a string is when you see the * symbol. This avoids confusion.

The ATARI has a number of special graphics characters. These are obtained by pressing combinations of keys. The bulk of these characters are obtained by pressing the Control key and one of the alphabetic character keys. Inverse characters (reverse images of characters) are obtained by pressing the inverse key on the extreme bottom right hand side of the keyboard. Normal characters are restored by pressing this key once more.

Frequently occurring (and easily overlooked) typing errors with the ATARI 130XE

1. Do not confuse the letter O with the digit Ø (zero).
2. Do not confuse the capital letter I with the numeric digit 1 (one).
3. A comma and a full stop (period) are not interchangeable.
4. When a colon is required do not type a semi-colon (;). These two characters are not interchangeable.
5. A double quote (") is not interchangeable with an apostrophe (').
6. Inside of character strings, spaces are mandatory if indicated by the * symbol.

7. It is important to get the number of brackets inside a BASIC formulae correct otherwise the line will be rejected. The bracket symbols are () and not [_.

8. The following characters are obtained by pressing the shift key and the numeric keys; ! " # \$ % & ' @ ()

Overall advice

If you type in a program line, press RETURN and the computer rejects it with an error message, then carefully compare the line with what's in the book. The line has been rejected because it has not been written according to the rules of BASIC. Retype the line correctly as per the book.

All BASIC program statements must be in upper case. Any reserve word in lower case will be rejected as an error. Also reserve words may not be in the inverse mode.

Once you have typed in a program save a copy of it to tape or disk. Under no circumstances type in a program and RUN it without doing this first. Most of the programs in this book contain POKES or machine language. If you make a mistake typing in a program and then RUN it, these are liable to erase your program or lock up the machine. If the error is disastrous enough, the only way to restart the machine is to switch it off and on, losing your program !!! If by some misfortune you should do this and the machine locks then press RESET. If control doesn't go back to BASIC then you have lost your program otherwise you may still have an opportunity to save it to tape or disk.

Save a program to tape with

```
SAVE "C:FILENAME"
```

or to disk with

```
SAVE "D:FILENAME"
```

After you have typed in a program and saved it to either tape or disk, it's safe to RUN it. Unfortunately just because the computer has accepted a program line doesn't mean that it's correct. You are likely to be presented with a number of error messages the first time you try to RUN a program. To some extent this can be prevented by using CHEXSUM in the next section but even that won't solve all problems. Here is a list of the most common error messages and their probable causes.

```
ERROR-      17 AT LINE nnnn
```

This generally means that you have typed in a line, caused a syntax error and didn't notice it. When a syntax error occurs, the word ERROR- is entered into the start of the bad line. So when the ATARI tries to execute the line it finds garbage. The error is repaired by retyping in the line correctly.

ERROR- 12 AT LINE nnnn

The computer has been told to GOTO, GOSUB, ON GOSUB or ON GOTO to a line and the line didn't exist. Check that the line which has the above statements in it has the right linenumber. Then check that the line it was told to goto actually exists.

ERROR- 6 AT LINE nnnn

The computer tried to read some information from a DATA statement with a READ statement and there wasn't enough data present. The most obvious cause of this error is a mistake in the DATA statements. Carefully go through the DATA statements making sure that all numbers are right. Check to see that no full stops have been exchanged for commas and vice versa.

ERROR- 8 AT LINE nnnn

The computer tried to read information from DATA statements, was expecting numeric information and got character information instead. The solution to this problem is the same as above. Check through your data statements and make sure that all the information is correct. Also make sure that the READ statement where the error occurred is correct.

ERROR- 3 AT LINE nnnn

The computer used a number which was out of range. For example a POKE statement tried to use a number which was not in the range 0-255. If a POKE statement contains a variable then print the contents of the variable and find out how it got to that value. Generally happens when a READ statement fetches an incorrect DATA statement and the computer tries to POKE the bad data. Check the DATA statement.

ERROR- 9 AT LINE nnnn

A reference was made to an array or a string and an error occurred. There are various reasons why this error has occurred. They are:

- * A reference was made to an array which didn't exist. There are two reasons for this; the variable in the line where the error occurred was incorrect, or the variable named in the DIM statement was incorrect. Check these two sources.

- * An array reference was incorrect. It was either greater than 32767 or a negative number. Check that the array reference was in this range or was not greater than the dimension size.

* A string variable must be declared with a DIM statement at the start of the program. If you get an array error for a string then either the string variable where the error occurred is wrong or the variable in the DIM statement is wrong. When you have typed in a program and you can't get it running properly, even after numerous debugging attempts, then put the job at rest for a day or so. It often happens that you will find the bug at once after resuming the job.

CHEXSUM

The unique CHEXSUM program validation

WHY

When a book of programs such as this book is keyed in, everybody invariably makes reading and typing mistakes and then spends ages trying to sort out where and what is causing the error (errors).

Even experienced programmers often cannot identify an error just by listing the relevant line and need to do the tedious job of going back to the book, especially with DATA statements.

Realizing that this is a major cause of frustration in keying the program, we decided to do something about it. There is a short routine in this book which you should key in and save BEFORE you key in any of the games programs.

Using this routine you will be able to find out if you made any keying errors at all and in which lines, before you even RUN the program. In effect this means that with this book you need not waste time looking for keying errors, you simply run the CHEXSUM routine and look at the display to identify lines containing errors. It's that easy.

The principle behind the routine is a unique check sum which is calculated on each line of the program you have keyed into the computer. Compare this chexsum value with the value for that line in the list at the end of the program listing; if they are the same the line is correct, if not there is an error in that line.

WHEN

The simplest method is to enter the CHEXSUM program in now and save a copy of it to tape or disk. To save it to disk use

```
LIST "D:CHEXSUM"
```

To save it to tape use

```
LIST "C:CHEXSUM"
```

The LIST command saves a copy of the CHEXSUM program to either tape or disk in ASCII. It is only possible to reload an ASCII file using:

For tape

```
ENTER "C:CHEXSUM"
```

For Disk

ENTER "D:CHEXSUM"

You can type in the CHEXSUM program at any time, even if you have started to type in a program. You cannot, of course LOAD in CHEXSUM from tape or disk because it will erase all you have typed so far. The obvious solution is to merge the programs. The CHEXSUM program should be saved onto a separate cassette to allow easy access.

HOW CAN YOU TELL IF CHEXSUM HAS BEEN ENTERED CORRECTLY

After having keyed in CHEXSUM it is very important that you know that CHEXSUM is working perfectly. Follow these instructions:

1. Type in the CHEXSUM program and save it to disk or tape with the commands suggested above.
2. Manually compare the CHEXSUM program you have typed in with the book. Get someone to read the book out to you while you check it against what's in the computer.
3. Keep repeating steps 1 and 2 until the checksum program is perfect.

Here is a listing of CHEXSUM and instructions on it's use:

```
32000 TOTAL=0
32010 STMTAB=PEEK(136)+PEEK(137)*256
32020 NUM=PEEK(STMTAB)+PEEK(STMTAB+1)*256
32030 IF NUM=32000 THEN GOTO 32070
32040 IF PEEK(STMTAB+4)=0 THEN 32050
32041 LINETOTAL=0: ? "LINE NUMBER: " ; NUM ; " = " ;
32043 FOR T=STMTAB+4 TO STMTAB+PEEK(STMTAB+2)-1
32044 LINETOTAL=LINETOTAL+PEEK(T)
32045 NEXT T
32046 TOTAL=TOTAL+LINETOTAL
32049 ? LINETOTAL
32050 STMTAB=STMTAB+PEEK(STMTAB+2)
32060 GOTO 32020
32070 ? "TOTAL " ; TOTAL
```

USING CHEXSUM

CHEXSUM is a special program which generates a unique sum for each line in a program and a grand total of all sums. After each program listing is a table of checksums. You need only compare the numbers in the CHEXSUM table for each program with those generated by CHEXSUM. If two numbers differ, check that particular line.

1. Type in your game program, PINGPONG, say. Save it to tape or disk.

2. If you have just typed in a program then ignore this step otherwise LOAD in you game from tape or disk.

3. Merge the CHEXSUM program onto the end of your program. Do this by putting the tape or disk containing the chexsum program into the drive and for disk typing:

```
ENTER "D:CHEXSUM"
```

for tape type:

```
ENTER "C:CHEXSUM"
```

4. Once the CHEXSUM program has been merged onto the end of your game program, enter GOTO 32000 to activate CHEXSUM.

5. Chexsum will now output the checksum for the program. To halt the program press the Control and the '1' keys. Press again to restart output.

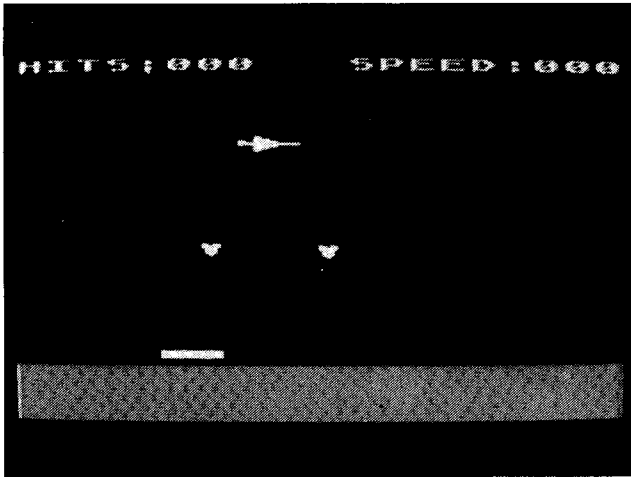
6. Check your grand total with that in the book. If they differ a line has been entered incorrectly. Compare line numbers until you locate the bad ones and then edit them.

7. Repeat steps 4 to 6 until the games program is debugged.

8. When the games program is running satisfactorily, delete the Chexsum program from the end of your game.

9. Finally save the debugged version onto a tape or disk.

BOMBER



CLASSIFICATION: Skill

A plane is flying above and periodically dropping bombs on the cities below. You have a shield which you must use to explode the bombs with before they hit the ground. The longer the game runs the faster the bomber flies and the faster the bombs are dropped. After a hundred bombs are dropped the speed decreases and after a hundred catches the speed increases. Use joystick one to move the shield left and right.

PROGRAMMING SUGGESTIONS

Have more than one bomber flying overhead and increase the number of bombs that can be dropped.

Program Variables

I	General purpose variable
PMBASE	Pointer to player missile data
PM	Page pointer to player missile data
A	Holds data begin read from data statement

Program Structure

5 -	8	Clear memory and read in programs
10 -	85	Set up graphics mode
100 -	120	Data for players
1000		Call machine language program
5000 -	5410	Data for machine language program

Listing

```

5   FOR I=33792 TO 33792+1023:POKE I,0:NEXT I
7   FOR I=30720 TO 30720+78:READ A:POKE I,A:NEXT I
8   FOR I=28672 TO 29510:READ A:POKE I,A:NEXT I
10  POKE 106,128
20  PM=PEEK(106):PMBASE=PM*256
30  GRAPHICS 1
35  PRINT #6;"CAUGHT: ^^^^HITS:"
40  POKE 559,62
50  POKE 53277,3
60  POKE 54279,PM
70  POKE 53256,2:POKE 53257,2
80  POKE 704,77:POKE 705,88:POKE 706,88
85  POKE 707,88
100 DATA 0,32,48,184,255,56,48,32,0,0,0,0,0,0,0,0,0,0,0,0
110 DATA 255,255,255,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
115 DATA 0,0,123,255,255,123,0,0,0,0,0,0,0,0,0,0,0,0,0,0
120 DATA 0,0,123,255,255,123,0,0,0,0,0,0,0,0,0,0,0,0,0,0
1000 A=USR(112*256)
5000 DATA 32,27,112,32,72,112,32,151,112,32,41,113,32,239,11
      3,32,75,113,32,131
5010 DATA 113,32,206,113,76,3,112,169,0,141,5,115,169,50,141
      ,4,115,169,8,141
5020 DATA 7,115,169,50,141,19,115,169,150,141,18,115,169,0,1
      41,62,115,141,63,115
5030 DATA 141,66,115,141,56,115,169,5,141,65,115,96,173,60,1
      15,240,4,206,60,115
5040 DATA 96,173,65,115,141,60,115,173,7,115,201,4,240,5,201
      ,8,240,26,96,173
5050 DATA 5,115,240,4,206,5,115,96,169,8,141,7,115,32,127,11
      3,201,100,176,249
5060 DATA 141,4,115,96,173,5,115,201,163,240,4,238,5,115,96,
      169,4,141,7,115
5070 DATA 32,127,113,201,100,176,249,141,4,115,96,173,59,115
      ,240,4,206,59,115,96
5080 DATA 173,65,115,141,59,115,173,62,115,201,1,240,6,32,19
      7,112,76,182,112,32
5090 DATA 247,112,173,63,115,201,1,240,4,32,222,112,96,32,16
      ,113,96,32,127,113
5100 DATA 201,210,176,17,169,1,141,62,115,173,5,115,141,33,1
      15,173,4,115,141,32
5110 DATA 115,96,32,127,113,201,200,144,17,169,1,141,63,115,
      173,5,115,141,47,115
5120 DATA 173,4,115,141,46,115,96,173,32,115,201,155,240,4,2
      38,32,115,96,169,0
5130 DATA 141,62,115,169,220,141,32,115,238,56,115,96,173,46
      ,115,201,155,240,4,238
5140 DATA 46,115,96,169,0,141,63,115,169,220,141,46,115,238,
      56,115,96,32,247,114
5150 DATA 201,4,240,5,201,8,240,12,96,173,19,115,201,0,240,3
      ,206,19,115,96
5160 DATA 173,19,115,201,163,240,3,238,19,115,96,173,13,208,
      170,41,4,208,6,138
5170 DATA 41,8,208,20,96,169,0,141,62,115,169,220,141,32,115
      ,169,0,141,30,208

```


5180 DATA 238,66,115,96,169,0,141,63,115,169,220,141,46,115,
 169,0,141,30,208,238
 5190 DATA 66,115,96,173,10,210,96,173,66,115,32,172,113,162,
 3,160,0,189,199,113
 5200 DATA 153,135,125,200,202,208,246,173,56,115,32,172,113,
 162,3,160,0,189,199,113
 5210 DATA 153,144,125,200,202,208,246,96,162,3,56,160,0,253,
 202,113,144,3,200,208
 5220 DATA 248,125,202,113,72,152,9,16,157,199,113,104,202,20
 8,231,96,0,0,0,1
 5230 DATA 10,100,173,66,115,201,100,240,8,173,56,115,201,100
 ,240,10,96,206,65,115
 5240 DATA 169,0,141,66,115,96,238,65,115,169,0,141,56,115,96
 ,120,32,202,114,160
 5250 DATA 14,162,0,189,253,114,149,176,232,136,208,247,32,10
 8,114,160,14,162,0,181
 5260 DATA 176,157,253,114,232,136,208,247,160,14,162,0,189,1
 1,115,149,176,232,136,208
 5270 DATA 247,32,108,114,160,14,162,0,181,176,157,11,115,232
 ,136,208,247,160,14,162
 5280 DATA 0,189,25,115,149,176,232,136,208,247,32,108,114,16
 0,14,162,0,181,176,157
 5290 DATA 25,115,232,136,208,247,160,14,162,0,189,39,115,149
 ,176,232,136,208,247,32
 5300 DATA 108,114,160,14,162,0,181,176,157,39,115,232,136,20
 8,247,32,216,114,88,96
 5310 DATA 165,183,197,182,240,68,160,0,165,184,24,105,46,145
 ,176,169,32,24,101,182
 5320 DATA 168,166,185,169,0,145,178,200,202,16,250,169,32,24
 ,101,183,141,64,115,162
 5330 DATA 0,142,53,115,166,185,172,53,115,177,180,238,53,115
 ,172,64,115,145,178,238
 5340 DATA 64,115,202,16,237,165,183,133,182,165,184,133,189,
 96,165,184,197,189,208,182
 5350 DATA 96,173,57,115,41,15,170,189,230,114,238,57,115,96,
 160,14,162,0,181,176
 5360 DATA 157,68,115,232,136,208,247,96,160,14,162,0,189,68,
 115,149,176,232,136,208
 5370 DATA 247,96,1,2,3,4,5,10,7,8,7,8,11,4,2,4,1,4,8,173
 5380 DATA 0,211,73,255,96,0,208,0,132,0,120,0,0,0,8,0,16,0,0,
 1
 5390 DATA 208,0,133,20,120,0,0,0,8,0,16,0,0,2,208,0,134,40,1
 20,0
 5400 DATA 0,0,8,0,16,0,0,3,208,0,135,60,120,0,0,0,8,0,0,0
 5410 DATA 0,0,0,79,0,0,0,0,0,0,0,0,5,0,0,0,0,156

ChexSum Tables

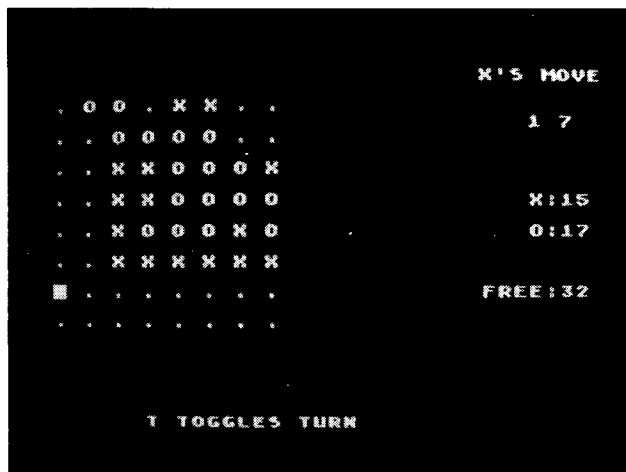
5 = 1421
7 = 1494
8 = 1568
10 = 277
20 = 1124
30 = 144
35 = 1218
40 = 420
50 = 406
60 = 473
70 = 782
80 = 1203
85 = 378
100 = 2454
110 = 2368
115 = 2372
120 = 2188
1000 = 716
5000 = 3467
5010 = 3393
5020 = 3601

5030 = 3556
5040 = 3405
5050 = 3450
5060 = 3358
5070 = 3611
5080 = 3549
5090 = 3484
5100 = 3533
5110 = 3590
5120 = 3507
5130 = 3706
5140 = 3623
5150 = 3285
5160 = 3509
5170 = 3446
5180 = 3616
5190 = 3567
5200 = 3748
5210 = 3630
5220 = 3390
5230 = 3619

5240 = 3559
5250 = 3703
5260 = 3866
5270 = 3745
5280 = 3714
5290 = 3769
5300 = 3719
5310 = 3726
5320 = 3761
5330 = 3776
5340 = 3956
5350 = 3625
5360 = 3788
5370 = 2398
5380 = 2652
5390 = 2736
5400 = 2390
5410 = 2037

TOTAL = 166569

OTHELLO



CLASSIFICATION: Strategy

This game uses the computer as a medium for two people to play the game of Othello. Pressing / or ? will display all the legal moves on the board as question marks. Placing the cursor over any man and pressing fire will do the same. If you have no legal moves then press T to change who's turn it is. Displayed on the right hand side of the screen is :

Who's turn (X or O)
The cursors current position x,y
The number of X's
The number of O's
The amount of free spaces on board

Use either joystick to move the cursor over the board. Press fire on either joystick to make a move. If you don't know how to play use ? to display legal moves and observe the results of making these moves. The object of the game is to have the most men at the end of the game. If a player has no legal moves then it becomes the other players turn to move (use T). The game is over when there are no legal moves for either player.

PROGRAMMING SUGGESTIONS

The board display could be done in high resolution with color. A command to take back the last move made would be useful. The machine could play against a human.

Program Variables

B()	Holds the position of men on the board
C	Local variable
CURH	Cursor's horizontal position
CURV	Cursor's vertical position
LOOP	Loop counter
O	Used in count men routine
OLDCUR	Cursor's old position
P	Index to array
PH	Holds initial value of P
R	Local variable
SCREEN	Address of start of video RAM
STOR	Stores value of character under the cursor
TURN	Who's turn 1 or -1
V	Used in move cursor routine
VALID	0 if move not valid else =1
X	Local variable, in delay routine etc.
Z	Local variable
ZZ	Counter for display in find all legal moves routine

Program Structure

10	Set colors and jump to initialization
100 - 800	Make a move
1000 - 1560	Find and make legal moves
9000	Delay routine
9100	Invalid move routine
10000 - 10080	Draw the board
10100 - 10130	Count number of men
10150 - 10220	Print information
11000 - 11140	Move the cursor
12000 - 12040	Put the cursor on screen
20000 - 20030	Initialize the system
30000 - 30070	Main loop

Listing

Set colors and jump to
initialization

```
10 SETCOLOR 1,0,12:SETCOLOR 2,0,0:POKE 752,1:GOTO 20000
50 DATA -10,-9,-8,-1,1,8,9,10
```

Make a move

```
100 IF STOR=31 THEN STOR=14
110 VALID=0:IF STOR<>14 THEN 1000
120 RESTORE 50:C=CURV:R=CURH
200 FOR LOOP=1 TO 8
210 P=R*9+C:PH=P
220 READ Z
230 P=P+Z
240 IF B(P)=0 THEN 500
250 IF B(P)=TURN THEN 500
260 P=P+Z
270 IF B(P)=0 THEN 500
280 IF B(P)=-TURN THEN GOTO 260
290 P=PH
300 VALID=1
310 B(P)=TURN
320 P=P+Z
330 IF B(P)=TURN THEN 500
340 GOTO 310
500 NEXT LOOP
600 IF NOT VALID THEN GOTO 9100
610 STOR=47:IF TURN=1 THEN STOR=56
700 TURN=-TURN
800 GOTO 30000
```

Find and make legal moves

```
1000 POKE OLDCUR,STOR:ZZ=63:VALID=0:FOR C=1 TO 8:FOR R=1 TO
8:RESTORE 50:POSITION 20,0:Z ZZ;"^";:ZZ=ZZ-1
1010 P=R*9+C:IF B(P) THEN 1510
1200 FOR LOOP=1 TO 8:P=R*9+C:PH=P:READ Z:P=P+Z:IF B(P)=0 OR
B(P)=4 THEN 1500
1250 IF B(P)=TURN THEN 1500
1270 P=P+Z:IF B(P)=0 OR B(P)=4 THEN 1500
1280 IF B(P)=-TURN THEN 1270
1310 VALID=1:B(PH)=4:LOOP=8
1500 NEXT LOOP
```

```

1510 NEXT R:NEXT C
1520 IF VALID THEN GOTO 1550
1530 POSITION 8,23:?"YOU HAVE NO MOVES";
1540 GOSUB 9000:TURN=-TURN:GOTO 30000
1550 P=CURH*9+CURV:IF B(P)=4 THEN STOR=31
1560 GOTO 30000

```

Delay routine

```

9000 FOR X=1 TO 1000:NEXT X:RETURN

```

Invalid move routine

```

9100 POSITION 7,23:?"_ _":POSITION 10,23:?"INVALID
MOVE";:GOSUB 9000:GOTO 30000
9998 REM G.STRETTON 85

```

Draw the board

```

10000 ? CHR$(125):?
10010 FOR C=1 TO 8:FOR R=1 TO 8:P=R*9+C:IF B(P)=4 THEN ? "?_ "
      :B(P)=0:NEXT R:?:?:NEXT C:GOTO 10100
10050 IF NOT B(P) THEN ? ". _":GOTO 10080
10060 IF B(P)=1 THEN ? "X _":NEXT R:?:?:NEXT C:GOTO 10100
10070 ? "O _";
10080 NEXT R:?:?:NEXT C

```

Count number of men

```

10100 X=0:O=0:FOR R=10 TO 80:IF NOT B(R) THEN NEXT R:GOTO 10
150
10110 IF B(R)=1 THEN X=X+1
10120 IF B(R)=-1 THEN O=O+1
10130 NEXT R

```

Print information

```
10150 POSITION 33,8:?"X:";X;
10160 POSITION 33,10:?"O:";O;
10170 POSITION 30,14:?"FREE:";64-(X+O);
10180 POSITION 30,0:IF TURN=1 THEN ? "X";
10190 IF TURN=-1 THEN ? "O";
10200 ? "'S MOVE";
10210 POSITION 8,23:?"T TOGGLES TURN";
10220 RETURN
```

Move the cursor

```
11000 V=STICK(0):IF V=15 THEN V=STICK(1)
11010 IF V=15 THEN RETURN
11020 IF V=14 THEN CURV=CURV-1
11030 IF V=6 THEN CURV=CURV-1:CURH=CURH+1
11040 IF V=7 THEN CURH=CURH+1
11050 IF V=5 THEN CURH=CURH+1:CURV=CURV+1
11060 IF V=13 THEN CURV=CURV+1
11070 IF V=9 THEN CURV=CURV+1:CURH=CURH-1
11080 IF V=11 THEN CURH=CURH-1
11090 IF V=10 THEN CURH=CURH-1:CURV=CURV-1
11100 IF CURH<1 THEN CURH=CURH+8
11110 IF CURH>8 THEN CURH=CURH-8
11120 IF CURV<1 THEN CURV=CURV+8
11130 IF CURV>8 THEN CURV=CURV-8
11140 RETURN
```

Put the cursor on screen

```
12000 POKE OLDCUR,STOR
12010 OLDCUR=SCREEN+(CURV*80)+(CURH*2)
12020 STOR=PEEK(OLDCUR)
12030 POKE OLDCUR,128
12040 RETURN
```

Initialize the system

```
20000 ? CHR$(125):DIM B(90):FOR X=0 TO 90:B(X)=0:NEXT X
20020 B(41)=1:B(49)=1:B(40)=-1:B(50)=-1:TURN=1
20030 SCREEN=40000:CURH=1:CURV=1:STOR=14:OLDCUR=SCREEN+(CURV*
80)+(CURH*2)
```

Main loop

```

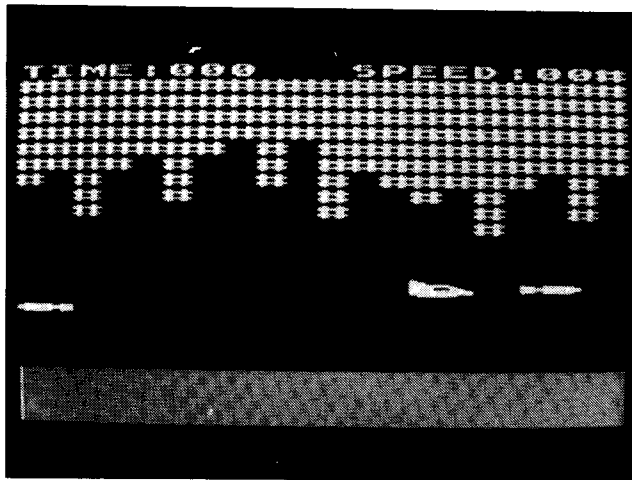
30000 GOSUB 10000:REM DRAW SCREEN
30010 GOSUB 11000:REM ADJUST CURSOR
30020 GOSUB 12000:REM PUT CURSOR
30030 IF ( NOT STRIG(1)) OR ( NOT STRIG(0)) THEN 100
30040 G=PEEK(754):IF G=45 THEN POKE 754,255:TURN=-TURN:GOTO 3
      0000
30050 POSITION 33,3: ? CURH;"▲";CURV;
30060 IF G=38 OR G=102 THEN POKE 754,255:GOTO 1000
30070 POKE 77,0:FOR X=1 TO 6:NEXT X:POKE OLDCUR,STOR:FOR X=1
      TO 3:NEXT X:GOTO 30010

```

ChexSum Tables

10 = 1146	1500 = 173	11050 = 1407
50 = 1162	1510 = 349	11060 = 861
100 = 713	1520 = 400	11070 = 1412
110 = 720	1530 = 3809	11080 = 864
120 = 1055	1540 = 887	11090 = 1420
200 = 407	1550 = 1705	11100 = 841
210 = 1133	1560 = 115	11110 = 850
220 = 201	9000 = 716	11120 = 835
230 = 589	9100 = 4238	11130 = 844
240 = 577	10000 = 422	11140 = 58
250 = 710	10010 = 4227	12000 = 355
260 = 589	10050 = 928	12010 = 1308
270 = 577	10060 = 1539	12020 = 577
280 = 890	10070 = 211	12030 = 339
290 = 408	10080 = 498	12040 = 58
300 = 337	10100 = 2185	20000 = 2254
310 = 657	10110 = 1102	20020 = 3127
320 = 589	10120 = 1159	20030 = 2891
330 = 710	10130 = 171	30000 = 1077
340 = 130	10150 = 746	30010 = 1282
500 = 173	10160 = 746	30020 = 1085
600 = 485	10170 = 1466	30030 = 896
610 = 1185	10180 = 777	30040 = 2169
700 = 469	10190 = 549	30050 = 778
800 = 115	10200 = 570	30060 = 1295
1000 = 3725	10210 = 1445	30070 = 2309
1010 = 1295	10220 = 58	
1200 = 3719	11000 = 1399	
1250 = 726	11010 = 395	
1270 = 1773	11020 = 863	
1280 = 889	11030 = 1409	
1310 = 1347	11040 = 853	
		TOTAL = 96503

MOUNTAINS



CLASSIFICATION: Arcade

Fly the ship through the mountains for as long as possible without hitting the mountains. If your ship touches the mountains the hit count is incremented. Every now and again a missile will fly by and you must avoid it or the hit counter will be incremented. Move the ship using joystick port 1.

PROGRAMMING SUGGESTIONS

Increase the intelligence of the enemy missiles so that when they come hurtling across the screen they will seek your craft out. Add objects to the bottom of the landscape that you have to pick up to keep the game going. Give the player a limited amount of fuel and time to complete his journey through the mountains.

Program Variables

I	General purpose variable
PMBASE	Pointer to player/missile area
A	Dummy variable

Program Structure

1 -	80	Initialize memory and variables
90		Call machine language program
100 -	120	Data for players
2000 -	2114	Data for machine language program

Listing

[illegible]

2038 DATA 202,208,236,169,5,24,109,214,113,141,215,113,56,16
 9,20,237,215,113,240,31
 2040 DATA 170,169,15,133,240,169,127,133,241,160,0,169,3,145
 ,240,165,240,56,233,20
 2042 DATA 133,240,165,241,233,0,133,241,202,208,236,96,173,1
 0,210,170,41,1,208,17
 2044 DATA 138,41,128,208,1,96,173,214,113,201,15,240,3,238,2
 14,113,96,173,214,113
 2046 DATA 201,1,240,232,206,214,113,76,184,113,7,0,173,77,11
 6,13,78,116,240,12
 2048 DATA 173,77,116,208,3,206,78,116,206,77,116,96,169,7,14
 1,77,116,169,0,141
 2050 DATA 78,116,32,71,114,201,1,240,16,201,2,240,22,201,4,2
 40,30,201,8,240
 2052 DATA 36,32,57,114,96,174,73,116,240,4,202,142,73,116,96
 ,174,73,116,224,151
 2054 DATA 240,4,232,142,73,116,96,174,74,116,240,4,202,142,7
 4,116,96,174,74,116
 2056 DATA 224,205,240,4,232,142,74,116,96,173,74,116,240,8,2
 06,74,116,169,20,141
 2058 DATA 126,116,96,173,0,211,73,255,96,173,123,116,208,32,
 32,252,115,201,210,176
 2060 DATA 3,32,93,114,96,169,1,141,123,116,32,252,115,201,15
 1,176,249,141,87,116
 2062 DATA 169,206,141,88,116,96,173,91,116,13,92,116,240,12,
 173,91,116,208,3,206
 2064 DATA 92,116,206,91,116,96,173,88,116,240,14,206,88,116,
 169,7,141,91,116,169
 2066 DATA 0,141,92,116,96,169,0,141,123,116,169,7,141,91,116
 ,169,0,141,92,116
 2068 DATA 96,173,128,116,240,4,32,205,114,96,173,132,2,240,1
 ,96,173,73,116,141
 2070 DATA 101,116,173,74,116,24,105,8,141,102,116,169,1,141,
 128,116,96,173,105,116
 2072 DATA 13,106,116,240,12,173,105,116,208,3,206,106,116,20
 6,105,116,96,173,102,116
 2074 DATA 201,206,240,14,238,102,116,169,5,141,105,116,169,0
 ,141,106,116,96,169,0
 2076 DATA 141,128,116,96,173,4,208,41,1,208,15,173,12,208,41
 ,2,208,17,173,13
 2078 DATA 208,41,4,208,27,96,238,73,115,169,0,141,30,208,96,
 169,200,141,87,116
 2080 DATA 141,88,116,169,0,141,123,116,32,18,115,96,169,200,
 141,87,116,141,88,116
 2082 DATA 141,101,116,141,102,116,169,0,141,123,116,141,30,2
 08,141,128,116,238,74,115
 2084 DATA 96,0,0,120,32,21,116,160,14,162,0,169,66,116,149,1
 76,232,136,208,247
 2086 DATA 32,171,115,160,14,162,0,181,176,157,66,116,232,136
 ,208,247,160,14,162,0
 2088 DATA 189,80,116,149,176,232,136,208,247,32,171,115,160,
 14,162,0,181,176,157,80
 2090 DATA 116,232,136,208,247,160,14,162,0,189,94,116,149,17
 6,232,136,208,247,32,171
 2092 DATA 115,160,14,162,0,181,176,157,94,116,232,136,208,24
 7,32,35,116,88,96,165
 2094 DATA 183,197,182,240,68,160,0,165,184,24,105,46,145,176
 ,169,32,24,101,182,168

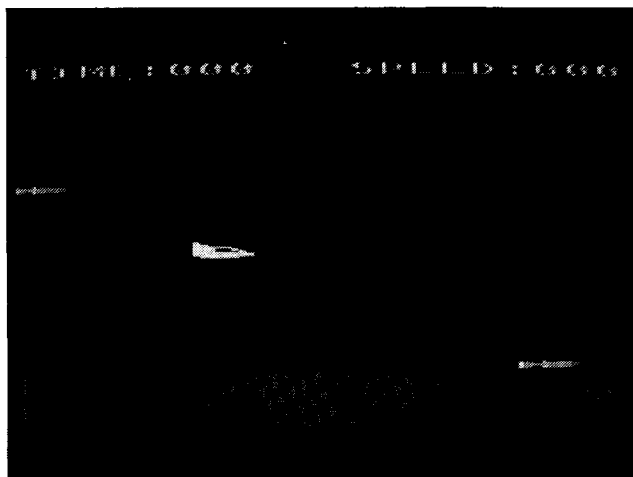
2096 DATA 166,185,169,0,145,178,200,202,16,250,169,32,24,101,
 ,183,141,129,116,162,0
 2098 DATA 142,122,116,166,185,172,122,116,177,180,238,122,11
 6,172,129,116,145,178,238,129
 2100 DATA 116,202,16,237,165,183,133,182,165,184,133,189,96,
 165,184,197,189,208,182,96
 2102 DATA 173,124,116,10,144,2,73,29,141,124,116,96,173,10,2
 10,173,10,210,173,10
 2104 DATA 210,173,10,210,96,160,14,162,0,181,176,157,130,116
 ,232,136,208,247,96,160
 2106 DATA 14,162,0,189,130,116,149,176,232,136,208,247,96,1,
 2,3,4,5,10,7
 2108 DATA 8,7,8,11,4,2,4,1,4,8,0,208,0,132,0,120,0,0,0,8
 2110 DATA 0,16,0,0,1,208,0,133,20,120,0,0,0,8,0,16,0,0,2,208

 2112 DATA 0,134,40,120,0,0,0,8,0,16,0,0,3,208,0,135,60,120,0
 ,0
 2114 DATA 0,8,0,0,0,0,0,0,79

ChexSum Tables

1 = 2276	2020 = 3811	2072 = 3780
5 = 1446	2022 = 4086	2074 = 3643
6 = 1587	2024 = 4089	2076 = 3399
7 = 1421	2026 = 3820	2078 = 3524
10 = 277	2028 = 3724	2080 = 3667
20 = 1124	2030 = 3807	2082 = 3824
30 = 144	2032 = 3580	2084 = 3505
40 = 420	2034 = 3994	2086 = 3648
50 = 406	2036 = 3621	2088 = 3773
60 = 473	2038 = 3741	2090 = 3822
70 = 371	2040 = 3700	2092 = 3678
80 = 1203	2042 = 3629	2094 = 3729
90 = 716	2044 = 3646	2096 = 3701
100 = 2810	2046 = 3488	2098 = 4073
110 = 2372	2048 = 3539	2100 = 3962
120 = 1360	2050 = 3307	2102 = 3577
2000 = 3534	2052 = 3568	2104 = 3749
2002 = 3688	2054 = 3566	2106 = 3206
2004 = 3613	2056 = 3608	2108 = 2363
2006 = 3589	2058 = 3701	2110 = 2537
2008 = 3458	2060 = 3607	2112 = 2637
2010 = 3639	2062 = 3620	2114 = 1012
2012 = 3320	2064 = 3641	
2014 = 3878	2066 = 3460	
2016 = 4118	2068 = 3508	
2018 = 3892	2070 = 3695	TOTAL = 225500

VOGONS



CLASSIFICATION: Skill

Move your player around the screen for as long as possible, avoiding the dreaded **Vogons**. There are three **Vogons** and they move around the screen at random, very quickly. At the start of the game you are prompted for the speed you want the **Vogons** to travel at. You may input any value between 1 and 255, with 1 being the highest speed and 255 the slowest. Use joystick 1 to move your player left, right, up and down. The longer you survive the more the score counter is incremented. When you are hit by a **Vogon** the score counter is set to zero.

PROGRAMMING SUGGESTIONS

Plant mines on the screen to restrict the area your player can move in and add 'bombs' that will disable or freeze your movement temporarily.

Program Variables

I	General purpose variable
PMBASE	Location of player missile data
PM	Pointer to player missile data
A	Holds data read from data statements

Program Structure

1 -	6	Clear the player area and read data
10 -	85	Setup the player missiles
90		Call machine language program
100 -	130	Data for players
5000 -	5460	Data for machine language program

Listing

```
1   FOR I=33792 TO 33792+1023:POKE I,0:NEXT I
5   FOR I=30720 TO 30720+79:READ A:POKE I,A:NEXT I
6   FOR I=28672 TO 29600:READ A:POKE I,A:NEXT I
10  POKE 106,128
20  PM=PEEK(106):PMBASE=PM*256
25  PRINT CHR$(125);:PRINT "WHAT ^SPEED ^";
26  INPUT A:IF A<1 OR A>9 THEN GOTO 26
27  POKE 29595,A
30  GRAPHICS 1
35  POSITION 0,0:PRINT #6;"TIME: ^^^^ ^SPEED:"
40  POKE 559,62
50  POKE 53277,3
60  POKE 54279,PM
70  POKE 53256,3:POKE 53257,3:POKE 53258,3:POKE 53259,3
80  POKE 704,77:POKE 705,88:POKE 706,88
85  POKE 707,77
90  A=USR(112*256)
```

Data for players

```
100  DATA 128,192,248,228,226,255,255,124,0,0,0,0,0,0,0,0,
    0,0,0
110  DATA 0,0,123,255,255,123,0,0,0,0,0,0,0,0,0,0,0,0,0
120  DATA 0,0,222,255,255,222,0,0,0,0,0,0,0,0,0,0,0,0,0
130  DATA 0,0,222,255,255,222,0,0,0,0,0,0,0,0,0,0,0,0,0
```

Data for machine language program

```
5000  DATA 32,21,112,32,169,112,32,253,112,32,101,114,32,44,1
    14,32,87,112,76,3
5010  DATA 112,169,0,141,143,115,169,50,141,91,115,141,90,115
    ,169,8,141,107,115,169
5020  DATA 0,141,105,115,169,50,140,104,115,169,50,141,119,11
    5,141,118,115,169,2,141
5030  DATA 121,115,169,25,141,133,115,141,132,115,169,4,141,1
    35,115,169,0,141,149,115
5040  DATA 141,148,115,141,30,208,96,173,149,115,13,150,115,2
    40,20,56,173,149,115,233
5050  DATA 1,141,149,115,173,150,115,233,0,141,150,115,76,128
    ,112,169,0,141,149,115
5060  DATA 169,3,141,150,115,238,148,115,173,148,115,32,61,11
    4,162,3,160,0,189,88
5070  DATA 114,153,133,125,200,202,208,246,173,155,115,32,61,
    114,162,3,160,0,189,88
5080  DATA 114,153,144,125,200,202,208,246,96,173,94,115,240,
    4,206,94,115,96,169,3
5090  DATA 141,94,115,32,95,114,170,41,1,208,16,138,41,2,208,
    23,138,41,4,208
5100  DATA 30,138,41,8,208,35,96,173,90,115,201,8,208,1,96,20
```

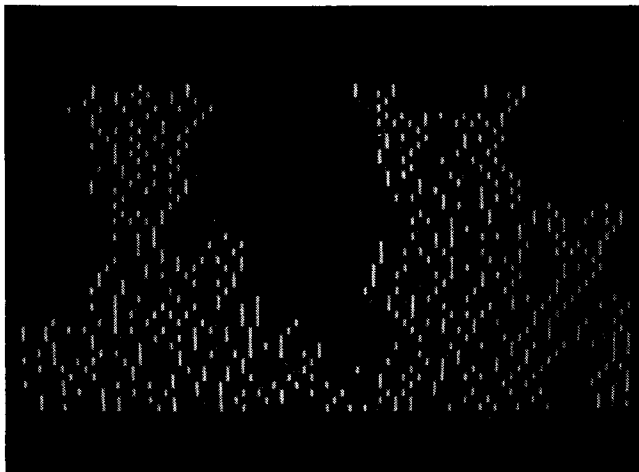

6,90,115,96,173
 5110 DATA 90,115,201,153,208,1,96,238,90,115,96,173,91,115,2
 08,1,96,206,91,115
 5120 DATA 96,173,91,115,201,130,208,1,96,238,91,115,96,173,1
 42,115,240,4,206,142
 5130 DATA 115,96,173,155,115,141,142,115,173,105,115,141,146
 ,115,173,104,115,141,147,115
 5140 DATA 173,107,115,141,145,115,173,152,115,141,151,115,32
 ,166,113,173,151,115,141,152
 5150 DATA 115,173,145,115,141,107,115,173,146,115,141,105,11
 5,173,147,115,141,104,115,173
 5160 DATA 119,115,141,146,115,173,118,115,141,147,115,173,12
 1,115,141,145,115,173,153,115
 5170 DATA 141,151,115,32,166,113,173,151,115,141,153,115,173
 ,145,115,141,121,115,173,146
 5180 DATA 115,141,119,115,173,147,115,141,118,115,173,133,11
 5,141,146,115,173,132,115,141
 5190 DATA 147,115,173,135,115,141,145,115,173,154,115,141,15
 1,115,32,166,113,173,151,115
 5200 DATA 141,154,115,173,145,115,141,135,115,173,146,115,14
 1,133,115,173,147,115,141,132
 5210 DATA 115,96,173,145,115,201,1,240,13,201,2,240,32,201,4
 ,240,51,201,8,240
 5220 DATA 68,96,173,151,115,240,10,206,151,115,173,147,115,2
 01,8,208,4,32,20,114
 5230 DATA 96,206,147,115,96,173,151,115,240,14,206,151,115,1
 73,147,115,201,153,240,4
 5240 DATA 238,147,115,96,32,20,114,96,173,151,115,240,12,206
 ,151,115,173,146,115,240
 5250 DATA 4,206,146,115,96,32,20,114,96,173,151,115,240,14,2
 06,151,115,173,146,115
 5260 DATA 201,130,240,4,238,146,115,96,32,20,114,96,174,10,2
 10,224,4,176,249,189
 5270 DATA 79,115,141,145,115,173,10,210,201,30,144,249,141,1
 51,115,96,173,12,208,41
 5280 DATA 14,208,1,96,169,0,141,148,115,141,30,208,96,162,3,
 56,160,0,253,91
 5290 DATA 114,144,3,200,208,248,125,91,114,72,152,9,16,157,8
 8,114,104,202,208,231
 5300 DATA 96,0,0,0,1,10,100,173,0,211,73,255,96,120,32,51,11
 5,160,14,162
 5310 DATA 0,189,83,115,149,176,232,136,208,247,32,226,114,16
 0,14,162,0,181,176,157
 5320 DATA 83,115,232,136,208,247,160,14,162,0,189,97,115,149
 ,176,232,136,208,247,32
 5330 DATA 226,114,160,14,162,0,181,176,157,97,115,232,136,20
 8,247,160,14,162,0,189
 5340 DATA 111,115,149,176,232,136,208,247,32,226,114,160,14,
 162,0,181,176,157,111,115
 5350 DATA 232,136,208,247,160,14,162,0,189,125,115,149,176,2
 32,136,208,247,32,226,114
 5360 DATA 160,14,162,0,181,176,157,125,115,232,136,208,247,3
 2,65,115,88,96,165,183
 5370 DATA 197,182,240,68,160,0,165,184,24,105,46,145,176,169
 ,32,24,101,182,168,166
 5380 DATA 185,169,0,145,178,200,202,16,250,169,32,24,101,183
 ,141,144,115,162,0,142
 5390 DATA 139,115,166,185,172,139,115,177,180,238,139,115,17

2,144,115,145,178,238,144,115
 5400 DATA 202,16,237,165,183,133,182,165,184,133,189,96,165,
 184,197,189,208,182,96,160
 5410 DATA 14,162,0,181,176,157,156,115,232,136,208,247,96,16
 0,14,162,0,189,156,115
 5420 DATA 149,176,232,136,208,247,96,1,2,4,8,0,208,0,132,0,1
 20,0,0,0
 5430 DATA 8,0,16,0,0,1,208,0,133,20,120,0,0,0,8,0,16,0,0,2
 5440 DATA 208,0,134,40,120,0,0,0,8,0,16,0,0,3,208,0,135,60,1
 20,0
 5450 DATA 0,0,8,0,0,0,0,0,79,0,0,0,0,0,0,0,0,0,0
 5460 DATA 0,0,0,0,0,0,4,33,0

ChexSum Tables

1 = 1421	5030 = 3790	5270 = 3739
5 = 1495	5040 = 3800	5280 = 3357
6 = 1553	5050 = 3686	5290 = 3649
10 = 277	5060 = 3613	5300 = 3168
20 = 1124	5070 = 3694	5310 = 3719
25 = 1230	5080 = 3666	5320 = 3777
26 = 931	5090 = 3347	5330 = 3712
27 = 580	5100 = 3375	5340 = 3847
30 = 144	5110 = 3521	5350 = 3863
35 = 1328	5120 = 3611	5360 = 3727
40 = 420	5130 = 3991	5370 = 3730
50 = 406	5140 = 3981	5380 = 3691
60 = 473	5150 = 4035	5390 = 4087
70 = 1663	5160 = 4039	5400 = 3961
80 = 1203	5170 = 3981	5410 = 3719
85 = 361	5180 = 4035	5420 = 2981
90 = 716	5190 = 3989	5430 = 2439
100 = 2810	5200 = 4036	5440 = 2743
110 = 2372	5210 = 3412	5450 = 2024
120 = 2372	5220 = 3591	5460 = 998
130 = 2372	5230 = 3799	
5000 = 3424	5240 = 3798	
5010 = 3704	5250 = 3696	
5020 = 3733	5260 = 3606	
		TOTAL = 193135

LIFE



CLASSIFICATION: Educational

Life is a simulation of the growth of a colony of cells that is controlled by prescribed rules. The joystick moves the cursor left and right. Pressing the fire button on the joystick sets the cell to the current cursor color. Pressing the R key sets a random starting pattern. Pressing the ESC key changes the cursor color and pressing RETURN exits the setup stage and starts the simulation.

PROGRAMMING SUGGESTIONS

Change the radius of the neighbourhood and change the rules that drive the game.

Program Variables

OLDCELLS()	Holds current array of cells
NUCELLS()	Working copy of cells
R()	Rule table
R	Radius of neighbourhood
K	Number of possible states of a cell

Program Structure

10	Jump to initialization
100 - 170	Main Loop
5000	Display
6000 - 6080	Calculate next generation
9000	Random setup
20000 - 20030	Initialize routine
20050 - 20076	Set number of states
20400 - 23010	Setup initial formation

Listing

```
10      GOTO 20000
```

Main Loop

```
100     POKE 77,0:OLDCELLS(81)=OLDCELLS(1):OLDCELLS(0)=OLDCELLS
      (80)
140     T=USR(1536):REM SCROLL SCREEN
150     GOSUB 5000:REM DISPLAY
160     GOSUB 6000:REM CALC NEXT GENERATION
170     GOTO 100
```

Display

```
5000    POSITION 0,OFFSET:FOR T=1 TO 80: ? #6;CHR$(OLDCELLS(T));
      :NEXT T:RETURN
```

Calculate next generation

```
6000    FOR I=1 TO 80
6010     S=0:FOR P=I-R TO I+R
6020     Z=P:IF Z>80 THEN Z=Z-80
6030     IF Z<1 THEN Z=Z+80
6040     S=S+OLDCELLS(Z)
6050     NEXT P
6060     NUCELLS(I)=R(S)
6070     NEXT I
6080     FOR I=1 TO 80:OLDCELLS(I)=NUCELLS(I):NEXT I:RETURN
```

Random setup

```
9000    FOR I=1 TO 80:OLDCELLS(I)=INT(RND(0)*K):NEXT I:DSFFLAG=
      1:RETURN
20000   DIM OLDCELLS(81),NUCELLS(81)
20030   GOSUB 30000
```

Initialize routine

```
20050   K=2:REM NUMBER OF POSSIBLE STATES
20060   R=2:REM RADIUS OF NEIGHBOURHOOD
20062   DIM R(5)
```

Set number of states

```

20071 R(0)=0
20072 R(1)=0
20073 R(2)=1
20074 R(3)=0
20075 R(4)=1
20076 R(5)=0

```

Setup initial formation

```

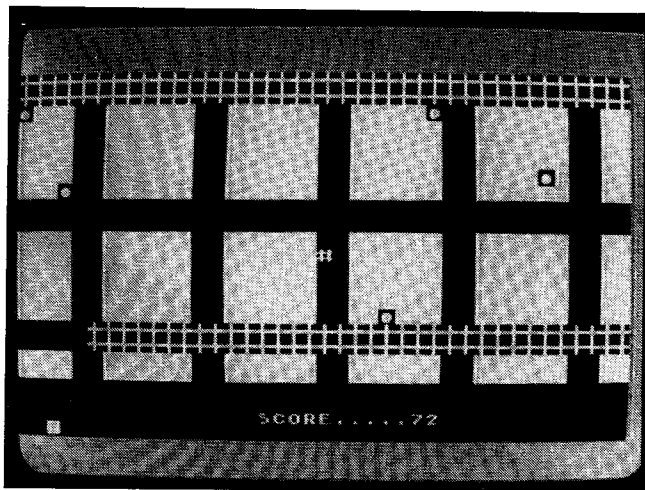
20400 FOR T=0 TO 81:OLDCELLS(T)=0
20410 NEXT T
21000 GRAPHICS 5
21010 X=40:?"R=RND _ _RETURN=START _JSTK _MOVES _CURSOR":? "Esc=C
    OLOUR"
21020 COLR=1
21030 OFFSET=0
21040 IF DSPFLAG THEN GOSUB 5000
21050 A=STICK(1):OLDX=X:DSPFLAG=0
21060 IF A=11 THEN X=X-1:IF X<0 THEN X=X+80
21070 IF A=7 THEN X=X+1:IF X>79 THEN X=X-80
21090 POSITION OLDX,1:?"#6,CHR$(0);
21100 POSITION X,1:?"#6;CHR$(COLR);
21110 IF NOT STRIG(1) THEN OLDCELLS(X+1)=COLR:DSPFLAG=1
21130 A=PEEK(764):POKE 764,255
21140 IF A=28 THEN COLR=COLR+1:IF COLR>K-1 THEN COLR=0
21150 IF A=40 THEN GOSUB 9000
22000 IF A<>12 THEN GOTO 21040
23000 GRAPHICS 5+16:REM G.STRETTON 85
23010 OFFSET=47:GOTO 100
30000 FOR T=1536 TO 1601:READ A:POKE T,A:NEXT T:RETURN
31000 DATA 104,169,47,141,66,6,169,160,133,203,169,155,133,20
    4,169,180,133,205,169,155
31001 DATA 133,206,160,0,162,20,177,205,145,203,200,202,208,2
    48,165,203,24,105,20
31002 DATA 133,203,169,0,101,204,133,204,165,205,24,105,20,13
    3,205,169,0,101,206
31003 DATA 133,206,206,66,6,208,213,96

```

ChexSum Tables

10 = 114	20050 = 5682	21090 = 741
100 = 2084	20060 = 5283	21100 = 869
140 = 1705	20062 = 370	21110 = 1531
150 = 903	20071 = 393	21130 = 1085
160 = 1804	20072 = 458	21140 = 1753
170 = 112	20073 = 524	21150 = 641
5000 = 1934	20074 = 460	22000 = 528
6000 = 523	20075 = 526	23000 = 1376
6010 = 1172	20076 = 462	23010 = 542
6020 = 1521	20400 = 998	30000 = 1404
6030 = 964	20410 = 166	31000 = 3877
6040 = 814	21000 = 148	31001 = 3575
6050 = 171	21010 = 4206	31002 = 3518
6060 = 885	21020 = 348	31003 = 1496
6070 = 169	21030 = 272	
6080 = 1736	21040 = 390	
9000 = 2357	21050 = 1288	
20000 = 955	21060 = 1852	TOTAL = 68830
20030 = 117	21070 = 2028	

RATMAZE



CLASSIFICATION: Evasion/Strategy

In this game, you must move around the maze, dodging everything you can. You must find the compass, which is hidden somewhere within the walls of the ratmaze. You must carefully travel through moving fences, dodge the flying balls and the mines that they lay. You must also avoid the deadly walls or else you will be destroyed. To move through the maze use the keys:

Q=UP
Z=DOWN
I=LEFT
P=RIGHT

any other key stops you from moving

PROGRAMMING SUGGESTIONS

Increase the number of objects you must find to complete the game. Make the objects which are flying round the screen more intelligent and more deadly.

Program Variables

A,I	Dummy variables
O	Character under your program
P	Your position in the maze
SCORE	Your score for the game

Program Structure

3 -	95	Initialize the system
100 -	150	Call machine program
1000 -	1100	Restart game
2000 -	2040	Give bonus points

Listing

Initialize the system

```

3  GRAPHICS 18:7 #6:7 #6:7 #6:7 #6:7 #6:7 #6:7 "▲▲▲▲▲WAIT!!
   !!!"
9  POKE 203,4:POKE 204,80:POKE 205,64:POKE 206,156:POKE 16
   96,0:POKE 1697,80
10  FOR T=20000 TO 20479:READ A:POKE T,A:NEXT T
11  DATA 104,165,245,72,165,246,72,169,164,133,245,169,6,13
   3,246,169,0,133,208,169,80
12  DATA 133,209,160,0,162,8,169,0,133,208,169,83,145,208,2
   30,208,208,248,177,245,41
13  DATA 127,24,105,8,16,2,169,8,133,208,169,8,133,207,169,
   0,145,208,198,208,198
14  DATA 207,208,246,165,208,24,105,129,133,208,169,8,133,2
   07,169,0,145,208,230,208,198
15  DATA 207,208,246,177,245,230,245,24,113,245,198,245,145
   ,245,230,245,230,245,165,209,24
16  DATA 105,8,133,209,202,208,171,104,133,246,104,133,245,
   96
20  DATA 104,160,0,169,0,133,208,169,80,133,209,169,0,145,2
   08,230,208,145,208,165,208,24,105,7
21  DATA 133,208,208,239,165,209,24,105,1,133,209,201,144,2
   08,228,169,0,133,208,169,80,133,209
22  DATA 169,0,145,208,230,208,208,248,24,169,4,101,209,133
   ,209,201,144,208,237,96
23  DATA 104,169,245,72,165,246,72,169,0,133,208,169,6,133,
   209,167,32,160,0,177
24  DATA 208,133,245,160,1,177,208,133,246,160,2,177,208,16
   0,0,145,245,160,3,177
25  DATA 208,24,101,245,133,245,160,0,145,208,169,0,101,246
   ,201,143,208,2,169,80
26  DATA 133,246,160,1,145,208,160,0,177,245,160,2,145,208,
   160,4,177,208,160,0
27  DATA 145,245,169,5,24,101,208,133,208,202,208,181,104,1
   33,246,104,133,245,96
28  DATA 104,169,0,133,245,169,80,133,246,162,64
29  DATA 160,0,169,128,145,245,200,208,249,230,246
30  DATA 202,208,242,96
31  DATA 104,173,242,2,201,47,240,13,201,23,240,36,201,13,2
   40,59,201,10,240,66,96,165,203,201,128,176,7,165,204
32  DATA 201,81,176,1,96,56,165,203,233,128,133,203,165,204
   ,233,0,133,204,96,165,203,201,128,144,7,165,204,201,131
33  DATA 208,1,96,24,165,203,105,128,133,203,165,204,105,0,
   133,204,96,165,203,41,127,201,88,176,2,230,203,96
34  DATA 165,203,41,127,201,88,176,2,230,203,96
35  DATA 104,165,203,72,165,204,72,165,205,72,165,206,72
36  DATA 169,20,133,207,162,40,160,0,177,203,145,205,200,20
   2,208,248,24,165,203,105,128,133,203,165,204
37  DATA 105,0,133,204,24,165,205,105,40,133,205,165,206,10
   5,0,133,206,198,207,208,214
38  DATA 104,133,206,104,133,205,104,133,204,104,133,203,96

```

```

40  A=USR(20285):A=USR(20117)
50  FOR T=1700 TO 1715 STEP 2:POKE T,64:A=INT(RND(1)*5)+1:IF
    A<4 THEN POKE T+1,256-A:NEXT T:GOTO 60
53  POKE T+1,A-3:NEXT T
60  FOR T=1536 TO 1695 STEP 5:POKE T,INT(RND(1)*100)+14:POKE
    T+1,INT(RND(1)*40)+96
65  POKE T+2,PEEK(PEEK(T)+PEEK(T+1)*256)
70  A=INT(RND(1)*5):IF INT(RND(1)*6)=1 THEN POKE T+3,1:GOTO
    80
75  POKE T+3,125+A
80  POKE T+4,84:NEXT T:SCORE=0
90  GRAPHICS 0:SETCOLOR 2,13,0:SETCOLOR 1,13,7:POSITION 16,
    22:? "SCORE.....":SCORE:SETCOLOR 4,4,4
95  POKE 752,0

```

Call machine program

```

100  A=USR(20186)
103  A=USR(20000)
105  A=USR(20311):P=PEEK(203)+256*PEEK(204)+1428:O=PEEK(P):P
    OKE P,3
110  A=USR(20408)
115  IF O<>0 THEN GOTO 1000
120  POKE P,O
140  POKE 33748,INT(RND(1)*4)+92
145  SCORE=SCORE+1:POSITION 26,22:PRINT SCORE
150  GOTO 100

```

Restart game

```

1000  ? CHR$(125)
1010  IF P=33748 THEN GOTO 2000
1020  GRAPHICS 19:? #6:? #6:? #6:? #6:" _ _ _ _ _ GAME _ OVER!"
1030  FOR I=0 TO 400:NEXT I
1040  GRAPHICS 0
1050  POSITION 15,10:? "HIT _ ANY _ KEY"
1060  POSITION 15,12:? "FOR _ ANOTHER"
1070  POSITION 18,14:? "GAME"
1080  POKE 754,0
1090  IF PEEK(754)<>0 THEN RUN
1100  GOTO 1090

```

Give bonus points

```

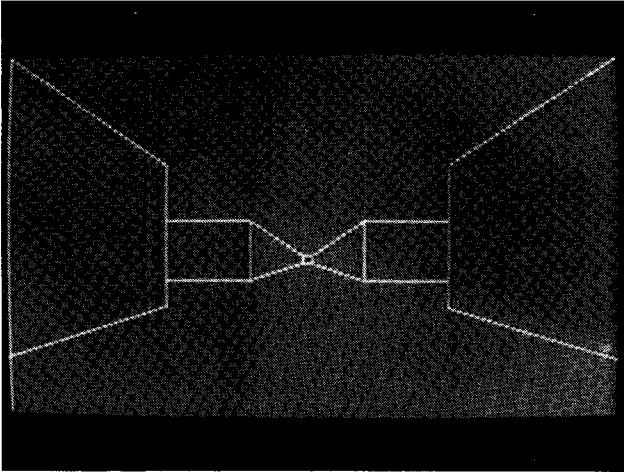
2000  GRAPHICS 18:? #6:? #6:? #6:? #6:? #6:" _ _ _ _ _ WELL _ DONE!":
    ? #6:? #6:" _ _ _ _ _ BONUS _ 1000 _ PTS.":SCORE=SCORE+1000
2010  POKE 203,4:POKE 204,80
2020  POKE 754,0
2030  IF PEEK(754) THEN GOTO 90
2040  GOTO 2030

```

ChexSum Tables

3 = 2208	33 = 4963	140 = 1095
9 = 2488	34 = 2032	145 = 1064
10 = 1280	35 = 2479	150 = 112
11 = 3937	36 = 4763	1000 = 343
12 = 3868	37 = 3925	1010 = 577
13 = 3686	38 = 2597	1020 = 2149
14 = 4023	40 = 1186	1030 = 509
15 = 4170	50 = 3697	1040 = 79
16 = 2717	53 = 749	1050 = 1159
20 = 4343	60 = 2987	1060 = 1195
21 = 4352	65 = 1444	1070 = 676
22 = 5765	70 = 2369	1080 = 255
23 = 3623	75 = 600	1090 = 506
24 = 3655	80 = 1014	1100 = 271
25 = 3639	90 = 2643	2000 = 4468
26 = 3544	95 = 253	2010 = 636
27 = 3655	100 = 632	2020 = 255
28 = 2089	103 = 497	2030 = 656
29 = 2183	105 = 2741	2040 = 191
30 = 853	110 = 509	
31 = 5147	115 = 362	
32 = 5312	120 = 334	
		TOTAL = 133509

2D MAZE



CLASSIFICATION: Skill

You are placed randomly within a maze and must work your way through to the end. The end of the maze is a flashing wall of color. Move forward using the joystick.

PROGRAMMING SUGGESTIONS

Put a time limit on solving the maze. Introduce random teleporters which change your position and orientation; once triggered, they disappear. Increase the size of the maze. Have nasty things chase you! Add secret, invisible passageways that change your position.

Program Variables

MZ()	Maze array
J	Current junction
D	Actual junction
MAND\$	Machine code for AND instruction
MOR\$	Machine code for OR instruction

Program Structure

10 -	110	Initialize the game
120 -	140	Scan the keyboard
150 -	180	Move the player
190 -	200	Rotate left or right
210 -	440	Draw the players view

Listing

Initialize the game

```
10 GOTO 3000
15 PRINT CHR$(125);"WAIT":DX=9:DY=9:XF=5:YF=9
20 DIM MZ(DX,DY):COLOR 1
30 RESTORE 50
40 FOR I=0 TO DY:FOR J=0 TO DX:READ A:MZ(J,I)=A:NEXT J:NEXT I
50 DATA 15,3,4,7,5,7,5,5,15,5,11,14,5,13,5,13,5,3,10,6,14,
  11,6,5,5,5,7,11,8,10
60 DATA 10,8,10,6,3,6,11,12,7,9,12,5,9,8,6,12,15,5,13,3,5,
  5,3,6,15,3,10,2,6,13
70 DATA 7,5,9,10,10,12,9,10,12,5,14,7,5,9,12,5,5,15,5,1,11,
  14,5,7,7,5,3,10,4,5
80 DATA 11,8,4,9,8,4,9,12,7,5
85 GOTO 110
```

Call MAND and MOR

```
90 LL=USR(ADR(MAND$),(X1*2),15):LL=LL+INT(USR(ADR(MAND$),X
  1,8)/8):RETURN
100 RR=INT(X1/2)+(USR(ADR(MAND$),X1,1)*8):RETURN
```

Scan the keyboard

```
110 X=INT(RND(0)*6+2):Y=INT(RND(0)*5):D=2^INT(RND(0)*4):GRA
  PHICS 8:GOSUB 210
120 B=STRIG(1):A=STICK(1):IF A=15 AND B=1 THEN 120
130 IF A=11 THEN X1=D:GOSUB 100:D=RR:GOSUB 210:GOTO 120
140 IF A=7 THEN X1=D:GOSUB 90:D=LL:GOSUB 210:GOTO 120
150 IF USR(ADR(MAND$),D,MZ(X,Y))=1 THEN X=X-1:IF X<0 THEN X
  =DX
160 IF USR(ADR(MAND$),D,MZ(X,Y))=2 THEN Y=Y+1:IF Y>DY THEN
  Y=0
170 IF USR(ADR(MAND$),D,MZ(X,Y))=4 THEN X=X+1:IF X>DX THEN
  X=0
180 IF USR(ADR(MAND$),D,MZ(X,Y))=8 THEN Y=Y-1:IF Y<0 THEN Y
  =DY
190 GOSUB 210:IF X=XF AND Y=YF THEN GRAPHICS 0:END
200 GOTO 120
```

Draw the players view

```

210  GRAPHICS 8: XN=X: YN=Y: IF USR(ADR(MAND$),D,MZ(X,Y))=0 THE
    N RETURN
220  IF USR(ADR(MAND$),D,MZ(X,Y))=1 THEN XN=X-1: IF XN<0 THEN
    XN=DX
230  IF USR(ADR(MAND$),D,MZ(X,Y))=2 THEN YN=Y+1: IF YN>DY THE
    N YN=0
240  IF USR(ADR(MAND$),D,MZ(X,Y))=4 THEN XN=X+1: IF XN>DX THE
    N XN=0
250  IF USR(ADR(MAND$),D,MZ(X,Y))=8 THEN YN=Y-1: IF YN<0 THEN
    YN=DY
260  PLOT 0,0: DRAWTO 87,57: PLOT 0,159: DRAWTO 87,130: PLOT 319
    ,0: DRAWTO 232,57: PLOT 319,159: DRAWTO 232,130
270  IF USR(ADR(MAND$),MZ(XN,YN),D)=0 THEN 300
280  PLOT 157,103: DRAWTO 162,103: DRAWTO 162,107: DRAWTO 157,1
    07: DRAWTO 157,103
281  PLOT 157,103: DRAWTO 130,85: PLOT 162,103: DRAWTO 189,85
290  PLOT 157,107: DRAWTO 130,116: PLOT 162,107: DRAWTO 189,116
    : GOTO 310
300  PLOT 130,85: DRAWTO 189,85: PLOT 130,116: DRAWTO 189,116
310  X1=D: GOSUB 100: IF USR(ADR(MAND$),MZ(XN,YN),RR)=0 THEN 3
    40
320  PLOT 87,57: DRAWTO 87,130: PLOT 130,85: DRAWTO 87,85: PLOT
    130,116: DRAWTO 87,116
330  IF USR(ADR(MAND$),MZ(XN,YN),D)>0 THEN PLOT 130,85: DRAWT
    O 130,116
340  X1=D: GOSUB 90: IF USR(ADR(MAND$),MZ(XN,YN),LL)=0 THEN 37
    0
350  PLOT 232,57: DRAWTO 232,130: PLOT 189,85: DRAWTO 232,85: PL
    OT 189,116: DRAWTO 232,116
360  IF USR(ADR(MAND$),MZ(XN,YN),D)>0 THEN PLOT 189,85: DRAWT
    O 189,116
370  X1=D: GOSUB 90: IF USR(ADR(MAND$),MZ(XN,YN),LL)>0 THEN 40
    0
380  PLOT 232,57: DRAWTO 189,85: PLOT 232,130: DRAWTO 189,116
390  IF USR(ADR(MAND$),MZ(XN,YN),D)=0 THEN PLOT 189,85: DRAWT
    O 189,116
400  X1=D: GOSUB 100: IF USR(ADR(MAND$),MZ(XN,YN),RR)>0 THEN 4
    30
410  PLOT 87,57: DRAWTO 130,85: PLOT 87,130: DRAWTO 130,116
420  IF USR(ADR(MAND$),MZ(XN,YN),D)=0 THEN PLOT 130,85: DRAWT
    O 130,116
430  IF XN=XF AND YN=YF THEN GRAPHICS 0: PRINT "HOME"
440  RETURN

```

Data for MAND and MOR

```

3000  DATA 104,104,133,213,104,133,212
3010  DATA 104,37,213,133,213,104,37,212,133,212,96
3020  RESTORE 3000: DIM MAND$(18),MOR$(18)
3030  FOR J=1 TO 18: READ A: MAND$(J,J)=CHR$(A): NEXT J
3040  MOR$=MAND$: MOR$(9,9)=CHR$(5): MOR$(14,14)=CHR$(5)

```



```

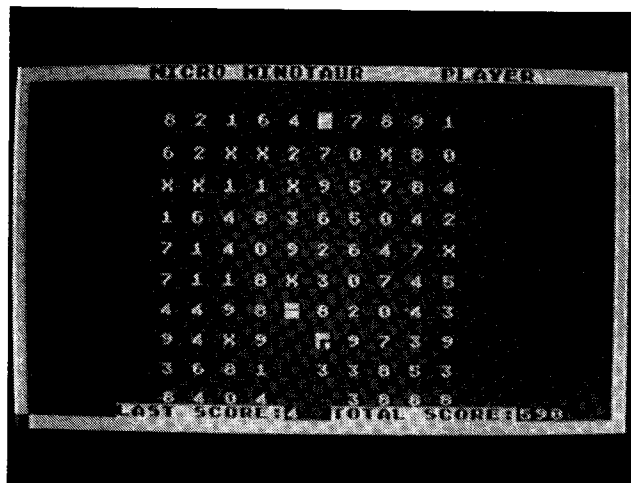
3050 REM A=USR(ADR(MAND$),X,Y) . A=X AND Y
3060 REM A=USR(ADR(MOR$),X,Y) . A= X OR Y
3070 GOTO 15

```

ChexSum Tables

10 = 159	180 = 2752	360 = 2425
15 = 2234	190 = 1027	370 = 2220
20 = 716	200 = 144	380 = 1809
30 = 215	210 = 2554	390 = 2426
40 = 2293	220 = 2752	400 = 2129
50 = 3539	230 = 2752	410 = 1795
60 = 3539	240 = 2749	420 = 2248
70 = 3539	250 = 2764	430 = 1196
80 = 1187	260 = 3203	440 = 58
85 = 128	270 = 1500	3000 = 1468
90 = 3037	280 = 1968	3010 = 2117
100 = 1800	281 = 1785	3020 = 972
110 = 3113	290 = 1788	3030 = 1859
120 = 1874	300 = 1823	3040 = 2233
130 = 1675	310 = 2145	3070 = 131
140 = 1804	320 = 2905	
150 = 2740	330 = 2247	
160 = 2740	340 = 2332	TOTAL = 106190
170 = 2737	350 = 2755	

MINOTAUR



CLASSIFICATION: Arcade

The objective of this game is to guess a number in the range of 0 to 99. You do it by moving a piece around a board of numbers. As you pass over a number, it is removed from the board and added to your score. If you pass over an X, a clue appears at the top of the board for a short time. If you pass over a question mark, a random number is added to your score. If you pass over a number greater than six as you move around the board, you are pursued by a minotaur. If he captures you, you're dead. Remember, once you pass over a number it is removed from the board and you cannot pass over spaces. If you become encircled by spaces press the fire button to escape. When you have guessed the number, move your piece to the white cursor.

PROGRAMMING SUGGESTIONS

Add different pieces to the board, such as bombs and mines. Place temporary barriers in the path of both the player and the minotaur.

Program Variables

SC	Screen memory
H\$	Characters on the screen
R	Row co-ordinate of player's piece
C	Column co-ordinate of player's piece
PO	Player's piece position
PE	Player's piece's previous position
BE	Start of matrix on screen
C1	Column position of minotaur
R1	Row position of minotaur
MA	Minotaur's screen position

Program Structure

10 -	90 Initialize the game and variables
100 -	400 Draw the screen and generate clues
400 -	550 Main loop
560 -	750 Move your player round the screen
850 -	910 Move the minotaur
920 -	1070 Print messagesy

Listing

```

10 REM MICRO MINOTAUR
20 CLR
21 DIM RR$(24),CC$(40),CL$(201),H$(11),NU$(2),A$(5),WA$(40),VT$(5)
23 POKE 82,0:PRINT CHR$(125);
24 SP=0:REM SET SPACE CHARACTER
25 IN=128:REM SET INVERSE SPACE
26 MI=13:REM SET THE MINOTAUR CHARACTER
27 XX=56:REM SET CLUE CHARACTER TO X
30 PRINT CHR$(125);
40 SC=40000:CO=40960:C=0:R=0:PO=SC+(R*40)+C:BE=SC+130
60 FOR I=1 TO 24:RR$(I,I)="$↓":NEXT I
70 FOR I=1 TO 40:CC$(I,I)="$→":NEXT I
80 FOR I=1 TO 200:CL$(I,I)="$▲":NEXT I
81 FOR I=1 TO 34:WA$(I,I)="$▲":NEXT I
90 J=1:FOR I=17 TO 25:H$(J,J)=CHR$(I):J=J+1:NEXT I:H$(10,10)=CHR$(31):H$(11,11)=CHR$(56)
100 FOR I=SC TO SC+39:POKE I,IN:NEXT I
110 FOR I=SC+(23*40)+1 TO SC+(23*40)+38:POKE I,IN:NEXT I
120 FOR I=SC+40 TO SC+(23*39) STEP 40:POKE I,IN:NEXT I
130 FOR I=SC+39 TO SC+(23*40)+39 STEP 40:POKE I,IN:NEXT I
140 POSITION 0,0:PRINT "MICRO MINOTAUR";
PLAYER:"";
150 FOR I=SC+130 TO SC+850 STEP 80
160 FOR J=I TO I+18 STEP 2
170 Q=INT(RND(1)*12):IF Q=0 THEN 170
180 A=ASC(H$(Q,Q))
190 POKE J,A:NEXT J:NEXT I
200 NU=INT(RND(1)*100):IF NU=0 THEN 200
210 NU$=STR$(NU):RA=INT(RND(1)*3):IF RA=0 THEN GOTO 210
220 IF NU<10 THEN NU$(2,2)=NU$(1,1):NU$(1,1)="$0"
230 IF RA=1 THEN CL$(1,19)="FIRST ▲DIGIT ▲EQUALS ▲":CL$(20,20)=NU$(2,2)
240 IF RA=2 THEN CL$(1,19)="SECOND ▲DIGIT ▲EQUAL ▲":CL$(20,20)=NU$(1,1)
250 CN=1:FOR I=2 TO NU-1
260 A=NU/I:B=INT(A):IF A<>B THEN 290
270 IF CN=7 THEN 300
280 CL$(((CN*20)+1),(CN*20)+17)="FACTOR ▲OF ▲NUMBER ▲":CL$((CN*20)+19,(CN*20)+20)=STR$(A):CN=CN+1
290 NEXT I
300 IF NU/2=INT(NU/2) THEN CL$(((CN*20)+1),(CN*20)+18)="THE ▲NUMBER ▲IS ▲EVEN"
310 IF NU/2<>INT(NU/2) THEN CL$(((CN*20)+1),(CN*20)+17)="TH E ▲NUMBER ▲IS ▲ODD"
320 GB=VAL(NU$(1,1)):FOR I=2 TO 9:A=GB/I:IF A=INT(GB/I) THEN GOSUB 1060:GOTO 340
330 NEXT I
340 GB=VAL(NU$(2,2)):FOR I=2 TO 9:A=GB/I:IF A=INT(GB/I) THEN GOSUB 1070:GOTO 360
350 NEXT I
360 SD=VAL(NU$(2,2)):IF SD/2=INT(SD/2) THEN CL$((7*20)+1,(7*20)+19)="FIRST ▲DIGIT ▲IS ▲EVEN"
370 IF SD/2<>INT(SD/2) THEN CL$((8*20)+1,(8*20)+18)="FIRST ▲DIGIT ▲IS ▲ODD"

```

```

380 SD=VAL(NU$(2,2)):IF SD/2=INT(SD/2) THEN CL$((8*20)+1,(8
*20)+20)="SECOND _DIGIT _IS _EVEN"
390 IF SD/2<>INT(SD/2) THEN CL$((8*20)+1,(8*20)+19)="SECOND
 _DIGIT _IS _ODD"
400 FOR I=1 TO 9:IF I*I=NU THEN CL$((20*9)+1,(20*9)+19)="PR
ODUCT _OF _A _SQUARE"
410 NEXT I
420 HO=BE+10:POKE HO,IN
430 C1=6:R1=6:MA=BE+(R1*40)+C1:VE=PEEK(MA):POKE MA,M1
440 C=10:R=18:PO=BE+(R*40)+C:VA=PEEK(PO):POKE PO,209
450 B=STRIG(1):A=STICK(1):IF A=15 AND B=1 THEN 550
460 IF A=14 THEN GOSUB 560
470 IF A=13 THEN GOSUB 620
480 IF A=11 THEN GOSUB 680
490 IF A=7 THEN GOSUB 740
500 IF B=0 THEN GOTO 1040
510 GOSUB 850
520 POSITION 0,0:PRINT "↓ ↓ → →";WA$
530 TT=TT+CU
540 POSITION 0,0:PRINT RR$(1,22);CC$(1,7);"LAST SCORE";
CU;": _ _ _TOTAL SCORE _ _ _";TT
550 CU=0:POKE MA,141:GOTO 450
560 IF R=0 THEN RETURN
570 R=R-2:PE=PO:PO=BE+(R*40)+C:DA=PEEK(PO):IF DA=SP THEN R=
R+2:PO=BE+(R*40)+C:RETURN
580 IF DA=M1 THEN GOTO 920
590 GOSUB 800
600 POKE PE,VA:FL=PEEK(PE):CU=FL-16:POKE PE,SP:VA=PEEK(PO)
610 POKE PO,209:RETURN
620 IF R=18 THEN RETURN
630 R=R+2:PE=PO:PO=BE+(R*40)+C:DA=PEEK(PO):IF DA=SP THEN R=
R-2:PO=BE+(R*40)+C:RETURN
640 IF DA=M1 THEN GOTO 920
650 GOSUB 800
660 POKE PE,VA:FL=PEEK(PE):CU=FL-16:POKE PE,SP
670 VA=PEEK(PO):POKE PO,209:RETURN
680 IF C=0 THEN RETURN
690 C=C-2:PE=PO:PO=BE+(R*40)+C:DA=PEEK(PO):IF DA=SP THEN C=
C+2:PO=BE+(R*40)+C:RETURN
700 IF DA=M1 THEN GOTO 920
710 GOSUB 800
720 POKE PE,VA:FL=PEEK(PE):CU=FL-16:POKE PE,SP
730 VA=PEEK(PO):POKE PO,209:RETURN
740 IF C=18 THEN RETURN
750 C=C+2:PE=PO:PO=BE+(R*40)+C:DA=PEEK(PO):IF DA=SP THEN C=
C-2:PO=BE+(R*40)+C:RETURN
760 IF DA=M1 THEN GOTO 920
770 GOSUB 800
780 POKE PE,VA:FL=PEEK(PE):CU=FL-16:POKE PE,SP
790 VA=PEEK(PO):POKE PO,209:RETURN
800 IF DA=63 THEN CU=INT(RND(1)*10)
810 FU=INT(RND(9)*10)
820 DI=(FU*20)+1:IF DA=XX THEN POSITION 0,0:PRINT CC$(1,5);
RR$(1,2);CL$(DI,DI+19);:GOSUB 1050
830 IF DA=IN THEN GOSUB 1000
840 RETURN
850 IF CU<6 THEN RETURN
860 IF C1>C THEN C1=C1-2

```

```

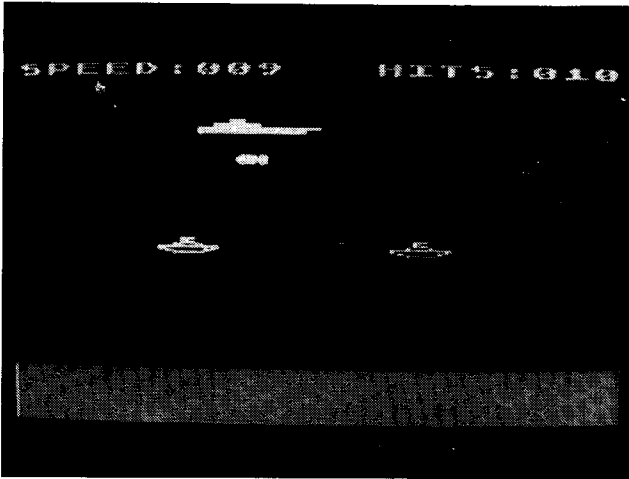
870 IF C1<C THEN C1=C1+2
880 IF R1>R THEN R1=R1-2
890 IF R1<R THEN R1=R1+2
900 POKE MA,VE:MA=BE+(R1*40)+C1:IF PEEK(MA)=209 THEN GOSUB
920:STOP
910 VE=PEEK(MA):POKE MA,MI:RETURN
920 PRINT CHR$(125);:PRINT RR$(1,10);"THE MINOTAUR HAS EATE
N YOU"
930 POSITION 0,0:PRINT RR$(1,13);"THE NUMBER WAS ";NU
940 PRINT :PRINT :PRINT
950 PRINT "DO YOU WANT ANOTHER GAME (Y/N):";
960 INPUT A$:IF A$="" THEN PRINT "↑";:GOTO 960
970 IF A$="Y" THEN GOTO 20
980 IF A$="N" THEN END
990 GOTO 960
1000 PRINT CHR$(125):PRINT RR$(1,2);CC$(1,3);"WHAT IS THE NU
MBER";:INPUT VT$
1005 VT=VAL(VT$)
1010 IF VT<>NU THEN PRINT "WRONG THE NUMBER WAS ";NU:GOTO 94
0
1020 PRINT "CONGRATULATIONS YOU HAVE BEATEN MINOTAUR"
1030 GOTO 940
1040 PRINT CHR$(125);:GOTO 930
1050 FOR I=1 TO 300:NEXT I:RETURN
1060 CL$((6*20)+1,(6*20)+19)="FACTOR SECOND DIGIT":CL$((6*20
)+20,(6*20)+20)=STR$(I):RETURN
1070 CL$((5*20)+1,(5*20)+18)="FACTOR FIRST DIGIT":CL$((5*20
)+20,(5*20)+20)=STR$(I):RETURN

```

ChexSum Tables

20 = 40	350 = 177	740 = 388
21 = 2865	360 = 4529	750 = 4994
23 = 682	370 = 3465	760 = 542
24 = 1778	380 = 4592	770 = 121
25 = 1770	390 = 3520	780 = 2060
26 = 2386	400 = 3758	790 = 1008
27 = 2183	410 = 177	800 = 1300
30 = 356	420 = 938	810 = 861
40 = 3214	430 = 2968	820 = 3579
60 = 1434	440 = 2850	830 = 518
70 = 1465	450 = 1974	840 = 58
80 = 1406	460 = 554	850 = 389
81 = 1459	470 = 490	860 = 942
90 = 4786	480 = 584	870 = 940
100 = 1279	490 = 511	880 = 946
110 = 2312	500 = 451	890 = 944
120 = 1914	510 = 201	900 = 2350
130 = 2102	520 = 491	910 = 1073
140 = 7439	530 = 645	920 = 2811
150 = 1127	540 = 6320	930 = 1925
160 = 784	550 = 928	940 = 179
170 = 1327	560 = 301	950 = 2126
180 = 1022	570 = 4998	960 = 788
190 = 748	580 = 542	970 = 487
200 = 1204	590 = 121	980 = 370
210 = 1897	600 = 2703	990 = 216
220 = 2100	610 = 379	1000 = 2936
230 = 3477	620 = 389	1005 = 592
240 = 3445	630 = 4998	1010 = 2352
250 = 980	640 = 542	1020 = 2985
260 = 1873	650 = 121	1030 = 184
270 = 409	660 = 2060	1040 = 549
280 = 5274	670 = 1008	1050 = 695
290 = 177	680 = 300	1060 = 4652
300 = 3676	690 = 4994	1070 = 4592
310 = 3582	700 = 542	
320 = 3386	710 = 121	
330 = 177	720 = 2060	
340 = 3436	730 = 1008	
		TOTAL = 199733

BATTLESHIP



CLASSIFICATION: Arcade

You are the commander of a battleship and must destroy enemy submarines. You destroy them by dropping depth charges on them. Each time one of them escapes the escape counter is incremented. Each time you hit one, the hit counter is incremented.

PROGRAMMING SUGGESTIONS

Add different kinds of submarines to your fleet of enemies and give them varying degrees of strength. Fit the submarines with different kinds of weapons, for example some sea to air missiles. Use the joystick to move your battleship left and right and press the fire button to launch a depth charge.

Program Variables

I	General purpose variable
X2	X position of battleship
Y2	Y Position of battleship
X1	X position of submarine 1
Y1	Y position of submarine 1
X3	X position of submarine 2
Y3	Y position of submarine 2
X4	X position of depth charge
Y4	Y position of depth charge

Program Structure

2 -	85	Clear out memory and read in data
100 -	130	Data for players
200 -	350	Set up players
1000 -	1041	Main loop
2000 -	2999	Initialize game
3000 -	3599	Move the battleship
4000 -	4999	Move the submarines
5000 -	5999	Move the mine
6000 -	6999	Update the score
7000 -	7030	Check for collision
9000 -	9090	Data for machine language program

Listing

```

2 CLR
6 FOR I=30720 TO 30798:READ A:POKE I,A:NEXT I
7 FOR I=33792 TO 33792+1023:POKE I,0:NEXT I
9 FOR I=28672 TO 29050:READ A:POKE I,A:NEXT I
10 POKE 106,128
20 PM=PEEK(106):PMBASE=PM*256
30 GRAPHICS 1
40 POKE 559,62
50 POKE 53277,3
60 POKE 54279,PM
70 POKE 53256,2
80 POKE 704,87:POKE 705,77:POKE 706,77
85 POKE 707,77
100 DATA 24,16,24,36,255,129,66,60,0,0,0,0,0,0,0,0,0,0,0,0,0
110 DATA 0,0,32,32,112,112,255,254,254,0,0,0,0,0,0,0,0,0,0,0,0
120 DATA 24,16,24,36,255,129,66,60,0,0,0,0,0,0,0,0,0,0,0,0,0
130 DATA 0,0,123,255,255,123,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
200 POKE 53256,1
210 POKE 53257,3
220 POKE 53258,1
230 POKE 53259,2
300 POKE 704,125
310 POKE 705,31
320 POKE 706,118
340 POKE 707,175
350 A=USR(28672,X1,Y1,X2,Y2,X3,Y3,X4,Y4)
1000 GOSUB 2000
1010 GOSUB 3000:REM BATTLESHIP
1020 GOSUB 4000:REM SUBMARINES
1025 GOSUB 5000:REM CHARGE
1027 GOSUB 6000:REM UPDATE
1030 A=USR(28672,X1,Y1,X2,Y2,X3,Y3,X4,Y4)
1040 GOSUB 7000:REM CHECK
1041 GOTO 1010
2000 POSITION 0,0
2020 X2=100:Y2=28:Y4=220:POKE 53278,0
2025 GOSUB 4500:Y1=Y:GOSUB 4500:Y3=Y
2999 RETURN
3000 REM BATTLESHIP
3005 A=STICK(1):POKE 53278,0
3010 IF A=11 THEN GOSUB 3100:RETURN
3020 IF A=7 THEN GOSUB 3200:RETURN
3030 IF STRIG(1)=0 THEN GOSUB 3500:RETURN
3040 RETURN
3100 REM LEFT
3110 IF X2=0 THEN RETURN
3120 X2=X2-4:RETURN
3200 REM RIGHT
3210 IF X2=128 THEN RETURN
3220 X2=X2+4:RETURN
3500 REM DROP DEPTH CHARGE
3501 IF IN THEN RETURN
3505 X4=X2:Y4=Y2+8:IN=1
3599 RETURN
4000 REM SUBMARINES

```

```

4005 GOSUB 4100:GOSUB 4200:RETURN
4100 REM MOVE SUBMARINE 1
4105 IF X1>180 THEN GOSUB 4500:ES=ES+1:Y1=Y:X1=0:RETURN
4110 X1=X1+(RND(1)*4):RETURN
4199 RETURN
4200 REM MOVE SUBMARINE 2
4205 IF X3>180 THEN GOSUB 4500:ES=ES+1:Y3=Y:X3=0:RETURN
4210 X3=X3+(RND(1)*4):RETURN
4299 RETURN
4500 Y=RND(9)*150:IF Y>150 THEN 4500
4505 IF Y<60 THEN 4500
4510 RETURN
4999 RETURN
5000 REM
5005 IF IN=0 THEN RETURN
5010 IF Y4>150 THEN Y4=220:IN=0:RETURN
5015 Y4=Y4+4:RETURN
5999 RETURN
6000 REM
6005 POSITION 0,0:PRINT #6;"ESCAPED:";ES;" ^HITS:";HI;" ^ ^";
6999 RETURN
7000 REM
7005 A=PEEK(53263):IF A=0 THEN RETURN
7010 IF A=1 THEN GOSUB 7100:RETURN
7015 IF A=4 THEN GOSUB 7200:RETURN
7020 IF A=5 THEN GOSUB 7100:GOSUB 7200:RETURN
7030 RETURN
7100 HI=HI+1:X1=0:GOSUB 4500:Y1=Y:IN=0:POKE 53278,0:Y4=220:R
    ETURN
7200 HI=HI+1:X3=0:GOSUB 4500:Y3=Y:IN=0:POKE 53278,0:Y4=220:R
    ETURN
7999 RETURN
9000 DATA 104,104,104,141,61,113,104,104,141,60,113,104,104,
    141,75,113,104,104,141,74
9005 DATA 113,104,104,141,89,113,104,104,141,88,113,104,104,
    141,103,113,104,104,141,102
9010 DATA 113,32,45,112,96,120,32,8,113,160,14,162,0,189,53,
    113,149,176,232,136
9015 DATA 208,247,32,170,112,160,14,162,0,181,176,157,53,113
    ,232,136,208,247,160,14
9020 DATA 162,0,189,67,113,149,176,232,136,208,247,32,170,11
    2,160,14,162,0,181,176
9025 DATA 157,67,113,232,136,208,247,160,14,162,0,189,81,113
    ,149,176,232,136,208,247
9030 DATA 32,170,112,160,14,162,0,181,176,157,81,113,232,136
    ,208,247,160,14,162,0
9035 DATA 189,95,113,149,176,232,136,208,247,32,170,112,160,
    14,162,0,181,176,157,95
9040 DATA 113,232,136,208,247,32,22,113,88,96,165,183,197,18
    2,240,68,160,0,165,184
9045 DATA 24,105,46,145,176,169,32,24,101,182,168,166,185,16
    9,0,145,178,200,202,16
9050 DATA 250,169,32,24,101,183,141,116,113,162,0,142,109,11
    3,166,185,172,109,113,177
9055 DATA 180,238,109,113,172,116,113,145,178,238,116,113,20
    2,16,237,165,183,133,182,165
9060 DATA 184,133,189,96,165,184,197,189,208,182,96,173,112,
    113,41,15,170,189,36,113

```

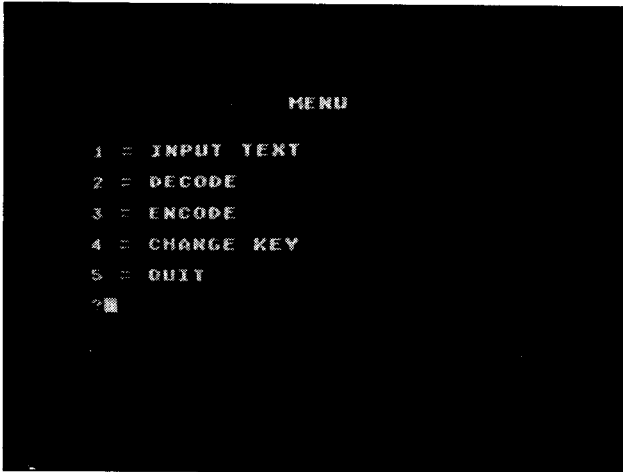
9065 DATA 238,112,113,96,160,14,162,0,181,176,157,117,113,23
2,136,208,247,96,160,14
9070 DATA 162,0,189,117,113,149,176,232,136,208,247,96,1,2,3
,4,5,10,7,8
9075 DATA 7,8,11,4,2,4,1,4,8,0,208,0,132,0,120,0,0,0,8,0
9080 DATA 16,0,0,1,208,0,133,20,120,0,0,0,8,0,16,0,0,2,208,0
9085 DATA 134,40,120,0,0,0,8,0,16,0,0,3,208,0,135,60,120,0,0
,0
9090 DATA 8,0,0,0,0,0,0,79,0,0,0,0,0,0,0,141,30,208

ChexSum Tables

2 = 40	1040 = 749	5999 = 58
6 = 1359	1041 = 143	6005 = 1864
7 = 1421	2000 = 113	6999 = 58
9 = 1631	2020 = 1575	7005 = 990
10 = 277	2025 = 1247	7010 = 613
20 = 1121	2999 = 58	7015 = 617
30 = 144	3005 = 889	7020 = 887
40 = 420	3010 = 565	7030 = 58
50 = 406	3020 = 556	7100 = 2894
60 = 472	3030 = 640	7200 = 2902
70 = 372	3040 = 58	7999 = 58
80 = 1185	3110 = 304	9000 = 3800
85 = 361	3120 = 609	9005 = 3900
100 = 2502	3210 = 410	9010 = 3548
110 = 2580	3220 = 608	9015 = 3747
120 = 2502	3501 = 257	9020 = 3711
130 = 2280	3505 = 1368	9025 = 3824
200 = 371	3599 = 58	9030 = 3638
210 = 374	4005 = 460	9035 = 3778
220 = 373	4105 = 2106	9040 = 3730
230 = 375	4110 = 993	9045 = 3719
300 = 278	4199 = 58	9050 = 3845
310 = 289	4205 = 2118	9055 = 4013
320 = 267	4210 = 1001	9060 = 3852
340 = 361	4299 = 58	9065 = 3760
350 = 2407	4500 = 1289	9070 = 3163
1000 = 145	4505 = 545	9075 = 2355
1010 = 1092	4510 = 58	9080 = 2537
1020 = 1117	4999 = 58	9085 = 2637
1025 = 794	5005 = 313	9090 = 2191
1027 = 835	5010 = 1215	
1030 = 2407	5015 = 618	

TOTAL = 128402

CRYPT



CLASSIFICATION: Passive

This program has a very good software random number generator. This is used instead of the normal `rnd(0)` function because the sequence of numbers generated by this method is repeatable. Changing the seed numbers, which should be prime, will change the numbers produced by the random routine which, in turn, alters the results of the encode and decode routines. The program is self prompting and the only thing to remember is that the seed numbers should be prime.

PROGRAMMING SUGGESTIONS

It should be possible to make this program work on text files from tape or disk and to work on larger amounts of text.

Program Variables

C	Used in random routine
CODE\$	Holds result of encode or decode
FLAG	Flag
H\$	List of allowable text characters
KEYA	User key A
KEYB	User key B
LOOP	Loop counter
MAIN\$	Holds text
Q	Local
SEEDA	Seed A for random routine
SEEDB	Seed B for random routine
T\$	Local string
TEST	Flag for print routine
Y	Local
Z	Local

Program Structure

10	Jump to initialization routine
11	Error message
12	Error Message
20 - 27	Input and check text
30 - 32	Input new keys
100 - 160	Main loop
900	Set for decode
1000	Set for encode
1005 - 3020	Encode or decode
4000 - 4050	Random number generator
5000	Delay loop
20000 - 21000	Initialization routine
30000 - 30040	The modulo arithmetic routine
31000	The good bye routine

Listing

```
10 GOTO 20000
11 ? :? "1_ TO _5_ ONLY":GOSUB 5000:GOTO 100
12 ? :? :? "INVALID _CHARACTER":GOSUB 5000:GOTO 20
```

Jump to initialization routine

```
20 FLAG=0: ? CHR$(125): ? "UPPER _CASE _ALPHA _AND _NUMBERS
   _ONLY _":POSITION 2.4:INPUT MAIN$
21 FOR X=1 TO LEN(MAIN$):X$=MAIN$(X,X)
22 IF X$="_" THEN GOTO 26
23 IF X$>="0" AND X$<="9" THEN GOTO 26
24 IF X$>="A" AND X$<="Z" THEN GOTO 26
25 FLAG=1
26 NEXT X:IF FLAG THEN GOTO 12
27 GOTO 100
```

Input and check text

```
30 ? CHR$(125): ? "NOTE _NUMBERS _SHOULD _BE _PRIME": ? : ? : ?
31 ? "KEY _A _=":KEYA:" _ _ _KEY _B=":KEYB: ? : ? "NEW _VALUE _FOR
   KEY _A": :INPUT KEYA
32 ? : ? "NEW _VALUE _FOR _KEY _B": :INPUT KEYB
100 ? CHR$(125)
110 POSITION 15.0: ? "MENU"
120 ? : ? : ? "1_=_INPUT _TEXT": ? : ? "2_=_DECODE": ? : ? "3_=_
   ENCODE": ? : ? "4_=_CHANGE _KEY": ? : ? "5_=_QUIT"
130 ? :INPUT X$:IF LEN(X$)=0 THEN 100
140 T$=X$(1,1):IF T$<"1" OR T$>"5" THEN GOTO 11
150 X=VAL(X$):IF X<1 OR X>5 THEN 11
160 ON X GOTO 20,900,1000,30,31000
```

Set for decode

```
900 TEST=0: ? CHR$(125): ? : ? : ? "WAIT _DECODING": ? : ? : ? :GOT
   O 1005
```

```

1000 TEST=1: ? CHR$(125): ? : ? : ? "WAIT _ENCODING": ? : ? : ?
1005 IF LEN(MAIN$)=0 THEN ? "NO _TEXT": GOSUB 5000: GOTO 100
1010 SEEDA=KEYA: SEEDB=KEYB: CODE$=""
1020 FOR LOOP=1 TO LEN(MAIN$)
1030 T$=MAIN$(LOOP,LOOP)
1040 FOR X=1 TO 37: IF T$=H$(X,X) THEN Q=X
1050 NEXT X
1060 GOSUB 4000: X=C: Y=37: GOSUB 3000
1070 IF NOT TEST THEN Q=Q-Z: IF Q<1 THEN Q=Q+37
1080 IF TEST THEN Q=Q+Z: IF Q>37 THEN Q=Q-37
1090 CODE$(LOOP,LOOP)=H$(Q,Q)
1100 NEXT LOOP: ? CHR$(125)
1110 IF TEST THEN ? : ? : ? "CYPHER _IS:": GOSUB 3000
1120 IF NOT TEST THEN ? : ? : ? "PLAINTEXT _IS:": GOSUB 3000
1130 ? : ? "PRESS _ENTER": INPUT T$
1140 GOTO 100
3000 ? : ? : ? CHR$(34): CODE$: CHR$(34): MAIN$=CODE$
3010 ? : ? : ? "IGNORE _": CHR$(34)
3020 ? : RETURN

```

Random number generator

```

4000 C=SEEDA+SEEDB
4010 IF C>32767 THEN C=C-32768
4020 C=C*2
4030 IF C>32767 THEN C=C-32767
4040 SEEDA=SEEDB: SEEDB=C
4050 RETURN : REM *****

```

Delay loop

```

5000 FOR X=1 TO 500: NEXT X: RETURN

```



```

20000 KEYA=7:KEYB=32633:REM XXXXXXXX
20001 SEEDA=KEYA:SEEDB=KEYB
20010 DIM MAIN$(255),CODE$(255)
20020 MAIN$="":CODE$=""
20030 DIM H$(37)
20040 H$="0123456789 _ABCDEFGHIJKLMNPOQRSTUVWXYZ"
20050 SETCOLOR 4,0,0:SETCOLOR 1,0,15:SETCOLOR 2,0,0
20060 DIM X$(9),T$(9)
21000 GOTO 100

```

The modulo arithmetic routine

```

30000 Z=X/Y
30010 Z=Z-INT(Z)
30020 Z=Z+1/(Y*10)
30030 Z=INT(Z*Y)
30040 RETURN

```

The good bye routine

```

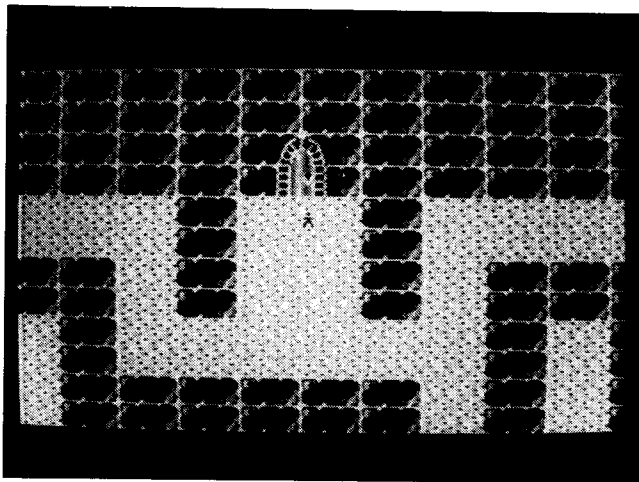
31000 ? :? :? :? "SO LONG":END

```

ChexSum Tables

10 = 114	1000 = 2307	4030 = 1131
11 = 1228	1005 = 1398	4040 = 867
12 = 1881	1010 = 1088	4050 = 1543
20 = 3645	1020 = 615	5000 = 665
21 = 1436	1030 = 822	20000 = 2320
22 = 434	1040 = 1685	20001 = 793
23 = 746	1050 = 161	20010 = 865
24 = 796	1060 = 1169	20020 = 556
25 = 328	1070 = 1737	20030 = 418
26 = 481	1080 = 1749	20040 = 2886
27 = 112	1090 = 1278	20050 = 860
30 = 2797	1100 = 531	20060 = 705
31 = 3104	1110 = 1329	21000 = 112
32 = 1671	1120 = 1620	30000 = 577
100 = 343	1130 = 1186	30010 = 773
110 = 616	1140 = 112	30020 = 524
120 = 4861	3000 = 1422	30030 = 770
130 = 739	3010 = 1044	30040 = 58
140 = 1497	3020 = 127	31000 = 875
150 = 1268	4000 = 573	
160 = 795	4010 = 1132	
900 = 2433	4020 = 521	
		TOTAL = 72569

DUNGEONS



CLASSIFICATION: Logic

Move your man round the maze of dungeons trying to find the exit. There are three dungeons and each one has an exit. Hitting the walls causes you to go back to the start of the maze. When you find an exit, move into it to reach the next level.

PROGRAMMING SUGGESTIONS

Increase the number of mazes in the game. Put objects in the maze which can eat you or send you back to the start.

Program Variables

LEVEL	Level you are playing.
MAXLEVELS	Maximum number of levels
T,A,A\$,K,N	Dummy variables
COV	Counter for footsteps

Program Structure

1 - 80	Intialization
100 - 150	Main Loop
400 - 430	Crash into wall
1000 - 1010	More intialization
15000 -15110	Completed maze
30000 -30362	Even more initialization

Listing

Intialization

```
1 DIM A$(32):? CHR$(125):POSITION 10,16:? "WAIT A MOMENT"
2 GOSUB 10000
3 GRAPHICS 18:? #6:? #6:? #6:? #6:? #6:? #6:"*****WAIT!!"
4
5
6
7
8
9 POKE 203,41:POKE 204,80:POKE 205,64:POKE 206,156
10 RESTORE 11:FOR T=20246 TO 20479:READ A:POKE T,A:NEXT T
11 DATA 104,162,64,169,0,133,208,169,80,133,209,160,0,169,
12 64,145,208
13 DATA 200,169,65,145,208,200,169,66,145,208,200,169,67,1
14 45,208,200,192
15 DATA 128,208,232,169,68,145,208,200,169,69,145,208,200,
16 169,70,145,208
17 DATA 200,169,71,145,208,200,208,234,230,209,202,208,205
18 ,96
19 DATA 104,173,242,2,201,47,240,13,201,23,240,36,201,13,2
20 40,59,201,10,240,66,96,165,203,201,128,176,7,165,204
21 DATA 201,81,176,1,96,56,165,203,233,128,133,203,165,204
22 ,233,0,133,204,96,165,203,201,128,144,7,165,204,201,131
23 DATA 208,1,96,24,165,203,105,128,133,203,165,204,105,0,
24 133,204,96,165,203,41,127,201,0,240,2,198,203,96
25 DATA 165,203,41,127,201,88,176,2,230,203,96
26 DATA 104,165,203,72,165,204,72,165,205,72,165,206,72
27 DATA 169,24,133,207,162,40,160,0,177,203,145,205,200,20
28 2,208,248,24,165,203,125,128,133,203,165,204
29 DATA 105,0,133,204,24,165,205,105,40,133,205,165,206,10
30 5,0,133,206,198,207,208,214
31 DATA 104,133,206,104,133,205,104,133,204,104,133,203,96
32 LEVEL=1:MAXLEVELS=4
33 GOSUB 10000
34 GRAPHICS 0:POKE 756,144:SETCOLOR 2,12,8:SETCOLOR 1,0,0
35 COL=4
36 A=USR(20311):A=USR(20408):IF PEEK(40379)<>89 THEN GOSUB
37 400
38 POKE 40379,88
39 IF PEEK(203)+256*PEEK(204)=33705 THEN GOSUB 15000
40 COL=COL+1:IF NOT COL THEN COL=2:FOR T=0 TO 30 STEP 10:
41 SOUND 2,T,0,10:NEXT T:SOUND 2,0,0,0
42 GOTO 100
```

Crash into wall

```
400 FOR T=0 TO 30 STEP 5:SOUND 1,T,0,10:NEXT T:SOUND 1,0,0,
41 0
42 POKE 754,0:POKE 203,41:POKE 204,80
43 FOR T=0 TO 30:POKE 756,224:POKE 756,144:NEXT T
44 RETURN
```

More initialization

```

1000 RESTORE 30000+LEVEL*100:GRAPHICS 20:COLOR 1:A=USR(20246
   )
1010 FOR T=0 TO 31:READ A#
1020 FOR N=1 TO 32
1030 C=20480+T*512+(N-1)*4
1040 IF NOT (ASC(A*(N))-32) THEN FOR A=0 TO 3:FOR B=0 TO 3:
   POKE C+A*128+B,89:NEXT B:NEXT A:PLOT N+24,T+8
1050 NEXT N:NEXT T
1060 FOR T=0 TO 3:FOR N=0 TO 3:POKE 21050+N*T*128,72+N*T*4:N
   EXT N:NEXT T
1070 FOR T=0 TO 3:FOR N=0 TO 3:POKE 34362+N*T*128,72+N*T*4:N
   EXT N:NEXT T
1100 RETURN
10000 POKE 756,144
10010 FOR T=0 TO 1023:POKE 36864+T,PEEK(57344+T):NEXT T
10020 RESTORE 10100+(INT(RND(1)*2)*21):FOR I=37376 TO 37439:R
   EAD A:POKE T,A:NEXT T:RESTORE 10130
10021 FOR T=37440 TO 37583:READ A:POKE T,A:NEXT T:RETURN
10100 DATA 0,127,213,175,223,175,95,127,0,31,191,255,255,255,
   255,255,0,243,255,255,255,255,255,255
10110 DATA 0,240,252,254,254,254,254,250,255,255,255,255,255,
   255,127,31,255,255,255,255,255,255,255,247,231
10120 DATA 255,255,255,255,253,250,253,255,244,250,244,234,86
   ,170,84,60
10121 DATA 0,127,85,106,85,106,85,106,0,255,85,170,85,170,85,
   170,0,255,85,170,85,170,85,170
10122 DATA 0,255,87,171,87,171,87,171,85,106,85,106,85,106,12
   7,127,85,170,85,170,85,170,255,255
10123 DATA 85,170,85,170,85,170,255,255,87,171,87,171,87,171,
   255,255
10130 DATA 0,227,255,155,255,255,254,254,0,240,252,231,158,63
   ,222,239,0,7,63,103,249,126,251,119
10135 DATA 0,248,253,255,255,255,127,127
10140 DATA 252,253,251,251,249,246,247,231,244,113,130,229,20
   2,21,202,213,47,78,161,87,171,80,171,83
10150 DATA 63,191,223,223,159,111,239,239,0,143,239,239,240,2
   39,239,239,42,149,170,149,42,149,170,149
10160 DATA 168,85,169,85,184,125,185,17,8,247,247,15,247,
   247,247,240,239,239,239,240,239,239,239
10170 DATA 42,149,170,149,42,149,170,149,128,69,169,85,168,85
   ,169,85,15,247,247,247,15,247,247,247
10180 DATA 24,24,0,126,24,60,102,102
10190 DATA 0,24,0,0,3,0,46,0

```

Completed maze

```

15000 FOR T=37376 TO 37567 STEP 8:RESTORE 15100:FOR N=0 TO 3:
   FOR K=0 TO 7:READ A:POKE T+K,A:NEXT K:NEXT N
15010 FOR K=0 TO (T+7):POKE K,0:NEXT K:SOUND 0,INT(RND(1)*255
   ),0,10:NEXT T:SOUND 0,0,0,0

```

```

15020 LEVEL=LEVEL+1:IF LEVEL=MAXLEVELS THEN GOTO 15060
15030 GRAPHICS 18:POSITION 0,5:?" #6:" ^^^^^^LEVEL^":LEVEL:FOR
      T=0 TO 255:SOUND 0,T,10,10:NEXT T:SOUND 0,0,0,0
15040 GOSUB 10000:POP :POKE 203,41:POKE 204,80:GOTO 50
15060 GRAPHICS 18:POSITION 0,5:?" #6:" ^^^^^^THE^END."
15070 FOR T=0 TO 1000:NEXT T:GRAPHICS 0:END
15100 DATA 126,255,191,223,159,223,159,126,100,230,175,235,25
      ,94,224,71
15110 DATA 192,134,14,12,0,64,193,99,128,130,4,0,0,64,64,1
20000 FOR T=0 TO 3:FOR N=0 TO 3:POKE 21054+N*T*128,72+N+T*4:N
      EXT N:NEXT T
20100 GOTO 20100
30100 DATA .....
30102 DATA .....
30104 DATA .....
30106 DATA .....
30108 DATA .....
30110 DATA .....
30112 DATA .....
30114 DATA .....
30116 DATA .....
30118 DATA .....
30120 DATA .....
30122 DATA .....
30124 DATA .....
30126 DATA .....
30128 DATA .....
30130 DATA .....
30132 DATA .....
30134 DATA .....
30136 DATA .....
30138 DATA .....
30140 DATA .....
30142 DATA .....
30143 DATA .....
30144 DATA .....
30145 DATA .....
30146 DATA .....
30148 DATA .....
30150 DATA .....
30152 DATA .....
30154 DATA .....
30156 DATA .....
30158 DATA .....
30200 DATA .....
30202 DATA .....
30204 DATA .....
30206 DATA .....
30208 DATA .....
30210 DATA .....
30212 DATA .....
30214 DATA .....
30216 DATA .....

```

```

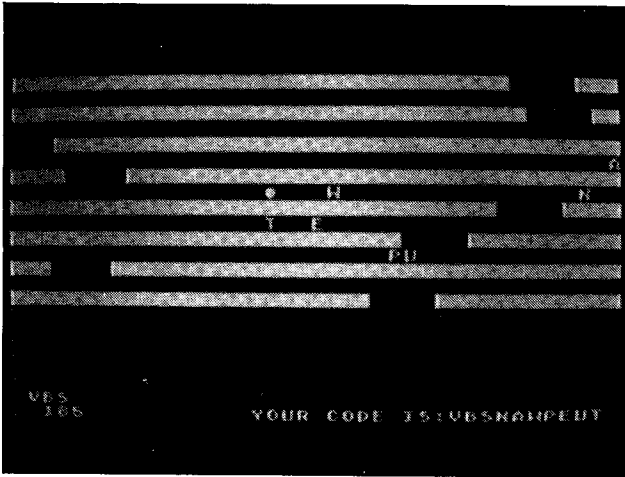
30218 DATA .....
30220 DATA .....
30222 DATA .....
30224 DATA .....
30226 DATA .....
30228 DATA .....
30230 DATA .....
30232 DATA .....
30234 DATA .....
30236 DATA .....
30237 DATA .....
30238 DATA .....
30240 DATA .....
30242 DATA .....
30243 DATA .....
30244 DATA .....
30246 DATA .....
30248 DATA .....
30250 DATA .....
30252 DATA .....
30254 DATA .....
30256 DATA .....
30258 DATA .....
30300 DATA .....
30302 DATA .....
30304 DATA .....
30306 DATA .....
30308 DATA .....
30310 DATA .....
30312 DATA .....
30314 DATA .....
30316 DATA .....
30318 DATA .....
30320 DATA .....
30322 DATA .....
30324 DATA .....
30326 DATA .....
30328 DATA .....
30330 DATA .....
30332 DATA .....
30334 DATA .....
30336 DATA .....
30338 DATA .....
30340 DATA .....
30342 DATA .....
30344 DATA .....
30346 DATA .....
30348 DATA .....
30350 DATA .....
30352 DATA .....
30354 DATA .....
30356 DATA .....
30358 DATA .....
30360 DATA .....
30362 DATA .....

```

ChexSum Tables

1 = 2150	10190 = 965	30224 = 1460
2 = 115	15000 = 3412	30226 = 1488
3 = 2208	15010 = 2678	30228 = 1432
9 = 1484	15020 = 1173	30230 = 1488
10 = 1570	15030 = 3051	30232 = 1432
11 = 3124	15040 = 1182	30234 = 1502
12 = 3328	15060 = 1403	30236 = 1404
13 = 3340	15070 = 718	30237 = 1516
14 = 2767	15100 = 3126	30238 = 1446
31 = 5147	15110 = 2461	30240 = 1432
32 = 5312	20000 = 2673	30242 = 1474
33 = 4763	20100 = 115	30243 = 1460
34 = 2032	30100 = 1628	30244 = 1418
35 = 2479	30102 = 1628	30246 = 1474
36 = 4767	30104 = 1362	30248 = 1446
37 = 3925	30106 = 1488	30250 = 1502
38 = 2597	30108 = 1418	30252 = 1334
40 = 691	30110 = 1502	30254 = 1628
50 = 129	30112 = 1404	30256 = 1628
60 = 1216	30114 = 1544	30258 = 1628
80 = 336	30116 = 1390	30300 = 1628
100 = 1951	30118 = 1502	30302 = 1628
105 = 493	30120 = 1404	30304 = 1348
110 = 1212	30122 = 1558	30306 = 1488
120 = 2805	30124 = 1362	30308 = 1418
150 = 112	30126 = 1530	30310 = 1488
400 = 1540	30128 = 1390	30312 = 1404
410 = 1007	30130 = 1502	30314 = 1446
420 = 1437	30132 = 1432	30316 = 1446
430 = 58	30134 = 1474	30318 = 1418
1000 = 1401	30136 = 1488	30320 = 1390
1010 = 579	30138 = 1418	30322 = 1460
1020 = 441	30140 = 1516	30324 = 1390
1030 = 1267	30142 = 1404	30326 = 1474
1040 = 3868	30143 = 1460	30328 = 1474
1050 = 334	30144 = 1502	30330 = 1460
1060 = 2669	30145 = 1460	30332 = 1474
1070 = 2739	30146 = 1460	30334 = 1418
1100 = 58	30148 = 1432	30336 = 1502
10000 = 391	30150 = 1558	30338 = 1474
10010 = 1759	30152 = 1334	30340 = 1432
10020 = 1992	30154 = 1628	30342 = 1446
10021 = 1686	30156 = 1628	30344 = 1488
10100 = 4469	30158 = 1628	30346 = 1432
10110 = 4723	30200 = 1628	30348 = 1530
10120 = 3139	30202 = 1628	30350 = 1418
10121 = 4124	30204 = 1348	30352 = 1460
10122 = 4347	30206 = 1502	30354 = 1488
10123 = 3015	30208 = 1404	30356 = 1390
10130 = 4352	30210 = 1516	30358 = 1628
10135 = 1600	30212 = 1376	30360 = 1628
10140 = 4552	30214 = 1558	30362 = 1628
10150 = 4632	30216 = 1376	
10160 = 4624	30218 = 1558	
10170 = 4526	30220 = 1362	
10180 = 1367	30222 = 1488	
		TOTAL = 298872

LETRMAZE



CLASSIFICATION: Skill

The object is to collect the letters in the maze in the shortest possible time and in the same order as shown at the bottom right of the screen. A letter is collected by touching it with your man. Joystick 2 moves your man (solid circle) vertically and horizontally. When the fire button is held down movement will be two spaces at once instead of one. Movement 'wraps around' horizontally.

PROGRAMMING SUGGESTIONS

Increase the size of the maze and give a number of levels to the game.

Program Variables

A()	Holds offsets
AM	=2 if fire pressed else =1
CODE\$	Holds code to be done
D()	Direction of line movement
MAX	Constant for random selection
OK	Flag
OLDPH	Old horizontal position
OLDPV	Old vertical position
PH	Man's horizontal position
PLACE	Points to next code letter to be obtained
POS	Screen address
PV	Man's vertical position
Q	Local
R	Where to peek for a random number
SCREEN	Address of first byte of video RAM
T	Local
TIME	Holds score
TN	Constant =39
X	Local
X\$	Local string
Y	Local
Z	Local

Program Structure

10	Set margins and goto initialize
100 - 200	Draw the maze
300 - 350	Read the joystick routine
1000 - 1090	Main loop
2000 - 2040	Hit something
3000 - 3070	Wrong thing
4000 - 4030	Got all the pieces
20000 - 21000	Initialize subroutine

Listing

10 POKE 82,0:POKE 83,39:GOTO 20000

Draw the maze

```
100 POSITION 0,1:Z=A(1):? B*(Z,Z+TN):Z=Z+D(1):IF Z>FE THEN
Z=Z-FE
101 IF Z<1 THEN Z=Z+FE
102 A(1)=Z:IF PEEK(R)>MAX THEN D(1)=-D(1)
110 POSITION 0,3:Z=A(2):? B*(Z,Z+TN):Z=Z+D(2):IF Z>FE THEN
Z=Z-FE
111 IF Z<1 THEN Z=Z+FE
112 A(2)=Z:IF PEEK(R)>MAX THEN D(2)=-D(2)
120 POSITION 0,5:Z=A(3):? B*(Z,Z+TN):Z=Z+D(3):IF Z>FE THEN
Z=Z-FE
121 IF Z<1 THEN Z=Z+FE
122 A(3)=Z:IF PEEK(R)>MAX THEN D(3)=-D(3)
130 POSITION 0,7:Z=A(4):? B*(Z,Z+TN):Z=Z+D(4):IF Z>FE THEN
Z=Z-FE
131 IF Z<1 THEN Z=Z+FE
132 A(4)=Z:IF PEEK(R)>MAX THEN D(4)=-D(4)
140 POSITION 0,9:Z=A(5):? B*(Z,Z+TN):Z=Z+D(5):IF Z>FE THEN
Z=Z-FE
141 IF Z<1 THEN Z=Z+FE
142 A(5)=Z:IF PEEK(R)>MAX THEN D(5)=-D(5)
150 POSITION 0,11:Z=A(6):? B*(Z,Z+TN):Z=Z+D(6):IF Z>FE THEN
Z=Z-FE
151 IF Z<1 THEN Z=Z+FE
152 A(6)=Z:IF PEEK(R)>MAX THEN D(6)=-D(6)
160 POSITION 0,13:Z=A(7):? B*(Z,Z+TN):Z=Z+D(7):IF Z>FE THEN
Z=Z-FE
161 IF Z<1 THEN Z=Z+FE
162 A(7)=Z:IF PEEK(R)>MAX THEN D(7)=-D(7)
170 POSITION 0,15:Z=A(8):? B*(Z,Z+TN):Z=Z+D(8):IF Z>FE THEN
Z=Z-FE
171 IF Z<1 THEN Z=Z+FE
172 A(8)=Z:IF PEEK(R)>MAX THEN D(8)=-D(8)
200 RETURN
```

Read the joystick routine

```
300 Z=STICK(0):AM=1:IF NOT STRIG(0) THEN AM=2
310 IF Z=14 AND PV>0 THEN PV=PV-AM
320 IF Z=13 AND PV<21 THEN PV=PV+AM
330 IF Z=11 THEN PH=PH-AM:IF PH<0 THEN PH=TN
340 IF Z=7 THEN PH=PH+AM:IF PH>TN THEN PH=0
350 RETURN
```

Main loop

```
1000 GOSUB 100:POSITION 2,23: ? TIME:"_":TIME=TIME+1
1010 GOSUB 300
1020 POS=PH+40*PV+SCREEN
1030 OLDPOS=OLDPH+40*OLDPV+SCREEN
1040 Q=PEEK(POS):IF Q THEN 2000
1050 POKE OLDPOS,Q
1060 POKE POS,84
1070 OLDPH=PH:OLDPV=PV
1090 GOTO 1000
```

Hit something

```
2000 IF Q=84 THEN 1050
2010 IF ASC(CODE$(PLACE,PLACE))<>0+32 THEN 3000
2020 POSITION PLACE,22: ? CHR$(Q+32):
2030 PLACE=PLACE+1:IF PLACE=11 THEN 4000
2040 GOTO 1050
```

Wrong thing

```
3000 FOR T=1 TO 28: ? :NEXT T
3010 ? " ^^^^^^^^NOPE ^YOU ^FLIPPED ^IT!!!"
3020 FOR T=1 TO 12:FOR X=1 TO 10:NEXT X: ? :NEXT T
3030 FOR T=1 TO 1000:NEXT T
3040 POSITION 5,23
3050 ? "PLEASE STOP! IT'S A MESS! YOU'VE DESTROYED THE CODE!!":
3060 INPUT X:
3070 RUN
```

Got all the pieces

```
4000 FOR T=1 TO 28: ? :NEXT T
4010 ? "YOU ^HAVE ^COMPLETED ^THE ^CODE!!!"
4020 ? : ? "YOUR ^TIME ^WAS ^":TIME
4030 GOTO 3020
```

Initialize subroutine

```

20000 DIM B$(88),X$(9):R=53770:MAX=240:TN=39:FE=48
20010 GRAPHICS 2+16
20020 POSITION 7,6
20030 ? #6;"WAIT"
20040 FOR X=1 TO 40
20050 B$(X,X)=CHR$(160)
20060 NEXT X
20070 FOR X=41 TO 44
20080 B$(X,X)=" "
20090 NEXT X
20100 FOR X=45 TO 88
20110 B$(X,X)=CHR$(160)
20120 NEXT X
20130 DIM A(8),D(8)
20140 FOR X=1 TO 8
20150 Z=INT(RND(0)*35)+1
20160 A(X)=Z
20170 Z=INT(RND(0)*2)-1
20180 IF Z=0 THEN 20170
20190 D(X)=Z
20200 NEXT X
20220 DIM CODE$(10):SCREEN=40000
20230 FOR X=1 TO 10
20240 Z=INT(RND(0)*26)+65
20250 IF LEN(CODE$)=0 THEN 20300
20260 OK=1
20270 FOR T=1 TO LEN(CODE$)
20280 IF ASC(CODE$(T,T))=2 THEN OK=0
20290 NEXT T:IF NOT OK THEN 20240
20300 CODE$(X,X)=CHR$(Z)
20310 NEXT X
20320 GRAPHICS 0:POKE 752,255:60800:GAA
20340 FOR T=1 TO LEN(CODE$)
20350 Y=INT(RND(0)*7)*2
20360 X=INT(RND(0)*40)
20370 OK=Y*40+X+SCREEN

```

Put character to screen

```

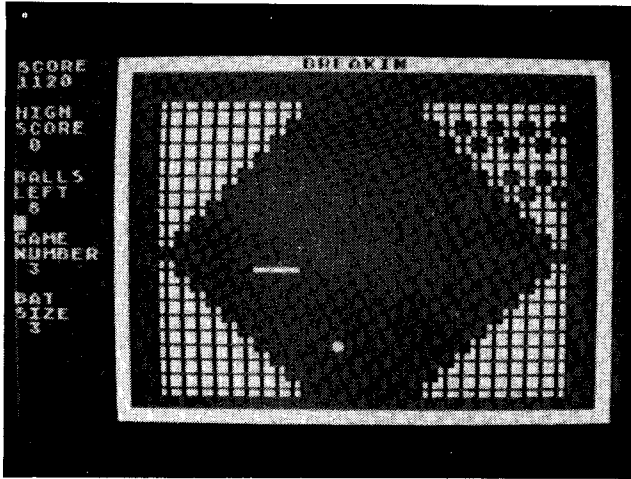
20380 IF FEER(OK)>0 THEN 20350
20390 POKE OK,ASC(CODE$(T,T))-32
20410 NEXT T
20420 PLACE=)
20430 POSITION 16,23
20440 ? "YOUR _CODE_ IS:";CODE$;
20450 PH=20:PV=21
20460 OLDPH=PH:OLDPV=PV
20470 TIME=0
21000 GOTO 1000

```

ChexSum Tables

10 = 906	1040 = 912	20140 = 414
100 = 3398	1050 = 227	20150 = 906
101 = 843	1060 = 421	20160 = 627
102 = 1939	1070 = 817	20170 = 852
110 = 3402	1090 = 127	20180 = 427
111 = 843	2000 = 620	20190 = 630
112 = 1942	2010 = 1288	20200 = 180
120 = 3406	2020 = 930	20220 = 757
121 = 843	2030 = 1041	20230 = 422
122 = 1945	2040 = 207	20240 = 987
130 = 3410	3000 = 738	20250 = 503
131 = 843	3010 = 1782	20260 = 351
132 = 1948	3020 = 1452	20270 = 641
140 = 3414	3030 = 626	20280 = 1278
141 = 843	3040 = 281	20290 = 592
142 = 1951	3050 = 6208	20300 = 1017
150 = 3424	3060 = 174	20310 = 180
151 = 843	3070 = 59	20320 = 666
152 = 1954	4000 = 738	20340 = 641
160 = 3428	4010 = 2022	20350 = 880
161 = 843	4020 = 1367	20360 = 818
162 = 1957	4030 = 191	20370 = 966
170 = 3432	20000 = 2766	20380 = 588
171 = 843	20010 = 282	20390 = 1155
172 = 1960	20020 = 254	20410 = 179
200 = 58	20030 = 523	20420 = 347
300 = 1520	20040 = 470	20430 = 298
310 = 1122	20050 = 1049	20440 = 1174
320 = 1216	20060 = 180	20450 = 763
330 = 1567	20070 = 538	20460 = 817
340 = 1551	20080 = 757	20470 = 274
350 = 58	20090 = 180	21000 = 127
1000 = 1317	20100 = 610	
1010 = 116	20110 = 1049	
1020 = 929	20120 = 180	
1030 = 943	20130 = 695	
		TOTAL = 113175

BREAKIN



CLASSIFICATION: Reflex

You are inside a four-walled container with a series of brick walls, a moving ball and a bat. The ball is bouncing off the bricks and you must use your bat to stop it getting past you and hitting the wall. You are given nine balls for each game and you lose a ball each time one gets past your bat. The bat can be moved left and right using the joystick. There are three different bricks walls and two bat sizes. The smaller the bat, the more points scored.

PROGRAMMING SUGGESTIONS

Add more brick walls to the game and make them more exotic. Vary the speed that the ball travels round the court.

Program Variables

SC	Start of screen
KE	Joystick port value
BS	Batsize
GS	Game size
BV	Vertical postion of bat
BH	Horizontal position of bat
BY	Vertical position of ball
BX	Horizontal position of ball
BA	Screen position of ball
DX	Horizontal movement value of ball
DY	Vertical movement value of ball

Program Structure

10	-	55	Intialization
60	-	150	Move the bat across the screen
160	-	260	Check for boundary hit
270	-	310	Check for missed ball
320	-	810	Select the game
830	-	890	Print game one on the screen
900	-	980	Print game two on the screen
990	-	1080	Print game three on the screen
1090	-	1150	End the game

Listing

[illegible]

```

610 FOR I=1 TO 200:NEXT I:FF=21:PRINT "↓↓"
620 GOSUB 50
630 PRINT "▲▲▲▲▲SELECT GAME NUMBER(1-3)":FOR
T=1 TO 90:NEXT T
640 PRINT "↑▲▲▲▲▲SELECT GAME NUMBER(1-3)":FOR T=1
TO 90:NEXT T
650 GM=PEEK(754):IF GM<26 THEN PRINT :PRINT "↑":GOTO 620
660 IF GM>31 THEN PRINT :PRINT "↑":GOTO 620
661 IF GM=31 THEN GM=1:GOTO 670
662 IF GM=30 THEN GM=2:GOTO 670
663 IF GM=26 THEN GM=3:GOTO 670
665 GOTO 640
670 PRINT "▲":GM:PRINT :FF=35
675 POKE 754,0
680 GOSUB 50
690 PRINT "▲▲▲▲▲SELECT BAT SIZE(2-3)":FOR T=1
TO 90:NEXT T
700 PRINT "↑▲▲▲▲▲SELECT BAT SIZE(2-3)":FOR T=1
TO 90:NEXT T
710 BS=PEEK(754):IF BS<26 THEN PRINT :PRINT "↑":GOTO 680
720 IF BS>30 THEN PRINT :PRINT "↑":GOTO 680
721 IF BS=30 THEN BS=2:GOTO 730
722 IF BS=26 THEN BS=3:GOTO 730
725 GOTO 700
730 POKE 754,0:PRINT "▲":BS
740 NB=9:GS=100*(4-BS)
750 FOR T=1 TO 500:NEXT T
760 PRINT CHR$(125);:PRINT "▲▲▲▲▲BREAKIN"
770 FOR I=1 TO 22:PRINT "▲▲▲▲▲▲▲▲▲▲▲"
780 PRINT "▲▲▲▲▲▲▲▲▲▲▲":NEXT I
790 PRINT "▲▲▲▲▲▲▲▲▲▲▲":POSITION 0,0
800 POSITION 0,0:PRINT "SCORE":PRINT "▲":GS:PRINT "↑HIGH":PR
INT "SCORE":PRINT "▲":HS:PRINT "↑BALLS"
810 PRINT "LEFT":PRINT "▲":NB:PRINT "↑GAME":PRINT "NUMBER":
PRINT "▲":GM
820 PRINT "↑BAT":PRINT "SIZE":PRINT "▲":BS
830 ON GM GOTO 830,900,990
840 REM GAME 1
850 POSITION 0,0:PRINT "↓↓↓"
860 FOR J=1 TO 4:PRINT "→→→→→→→→→→:=====
=====":NEXT J
870 IF GS>0 THEN GS=GS+1
880 IF SW>0 THEN 60
890 SW=1:BV=21:BH=17:BY=15:BX=18:BA=SC+BY*40+BX:DX=-1:DY=-1
900 GOTO 110
910 REM GAME2
920 POSITION 0,0:PRINT "↓↓↓"
930 FOR J=1 TO 3:PRINT "→→→→→→→→→→:=====
=====":NEXT J
940 PRINT "↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑"
950 FOR J=1 TO 3:PRINT "→→→→→→→→→→:=====
=====":NEXT J
960 IF GS>0 THEN GS=GS+1
970 IF SW>0 THEN 60

```

```

970 SW=1:BV=13:BH=20:BY=10:BX=21:BA=SC+BY*40+BX:DX=1:DY=-1
980 GOTO 110
990 REM GAME 3
1000 POSITION 0,0:PRINT "↓↓"
1010 FOR I=0 TO 8:PRINT "→→→→→→→→→→";:FOR J=9-I TO 1 STEP
-1 :PRINT "■";:NEXT J
1020 PRINT SPC$(1,I*2+8);:FOR J=9-I TO 1 STEP -1:PRINT "■";:
NEXT J:PRINT :NEXT I:PRINT
1030 FOR I=0 TO 8:PRINT "→→→→→→→→→→";:FOR J=1
TO I+1:PRINT "■";:NEXT J
1040 PRINT SPC$(1,((8-I)*2)+8);:FOR J=1 TO I+1:PRINT "■";:NE
XT J:PRINT :NEXT I:POSITION 0,0
1050 IF GS>0 THEN GS=GS+1
1060 IF SW>0 THEN 60
1070 SW=1:BV=13:BH=16:BY=9:BX=24:BA=SC+BY*40+BX:DX=1:DY=-1
1080 GOTO 110
1090 REM END OF GAME
1100 POSITION 0,0:PRINT "↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓→→→→→→→→→→
↑↑↑↑
↑ANOTHER↑ GAME(Y/N)";
1110 INPUT A$
1120 IF A$="N" THEN PRINT CHR$(125);:END
1130 IF A$<>"Y" THEN 1110
1140 IF GS>HS THEN HS=GS
1150 SW=0:GOTO 600

```

ChexSum Tables

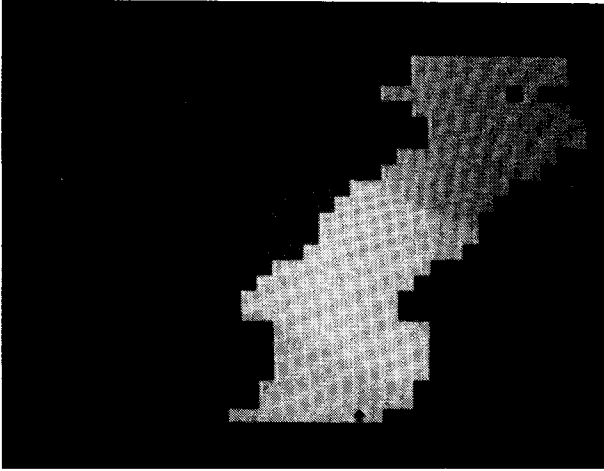
1 = 353
 11 = 40
 12 = 1835
 13 = 2052
 14 = 1926
 15 = 1820
 16 = 2019
 17 = 1893
 19 = 253
 20 = 2648
 21 = 1436
 30 = 914
 40 = 142
 50 = 985
 55 = 58
 70 = 1344
 80 = 680
 90 = 726
 100 = 602
 110 = 2387
 120 = 1443
 130 = 676
 140 = 1145
 150 = 2581
 170 = 1635
 180 = 1216
 190 = 1262
 200 = 1621
 210 = 1476
 230 = 1341
 240 = 2462
 250 = 2820
 260 = 360
 280 = 2400

290 = 1987
 300 = 546
 310 = 1127
 320 = 722
 340 = 356
 600 = 1689
 610 = 1185
 620 = 192
 630 = 5639
 640 = 2749
 650 = 1424
 660 = 745
 661 = 996
 662 = 996
 663 = 987
 665 = 181
 670 = 771
 675 = 255
 680 = 192
 690 = 5073
 700 = 2567
 710 = 1502
 720 = 831
 721 = 915
 722 = 906
 725 = 118
 730 = 551
 740 = 1129
 750 = 631
 760 = 6151
 770 = 2344
 780 = 5650
 790 = 2712
 800 = 1962

810 = 1020
 820 = 721
 840 = 268
 850 = 5505
 860 = 809
 870 = 436
 880 = 4055
 890 = 128
 910 = 268
 920 = 5504
 930 = 429
 940 = 5504
 950 = 809
 960 = 436
 970 = 3998
 980 = 128
 1000 = 268
 1010 = 2193
 1020 = 2740
 1030 = 1998
 1040 = 2962
 1050 = 809
 1060 = 436
 1070 = 3984
 1080 = 128
 1100 = 2269
 1110 = 155
 1120 = 761
 1130 = 452
 1140 = 825
 1150 = 434

TOTAL = 152964

RACER



CLASSIFICATION: Skill

The object of this game is to get as far around the course as possible. Steer the car left and right with the joystick. To make the car go faster push the joystick forward, to go slower press the joystick back.

PROGRAMMING SUGGESTIONS

Add a speedometer to the car so you can tell just how fast the car is travelling. Also add other cars to the race to compete against you.

Program Variables

A	Local
CAR\$	Holds car
CARPOS	Horizontal position of car
DIFFICULTY	Difficulty level
F	Flag
LEFTLIMIT	Left limit of road
R	=53770 Where to peek for a random number 0 .. 255
RIGHTLIMIT	Right limit of road
ROAD\$	Holds road
ROADPOS	Horizontal position of road
SCORE	Holds score
SPEED	Speed of movement
VOL	Volume of sound
X	Local
Y	Local

Program Structure

10	Jump to initialization
300 - 610	Main loop
1000 - 1060	Game End
2000 - 2080	Game start
20000 - 21220	Initialize game

Listing

10 GOTO 20000

Main loop

```
300 SCORE=SCORE+1:X=RND(0)*DIFFICULTY:IF PEEK(R)>127 THEN X
   =-X
320 ROADPOS=ROADPOS+X:IF ROADPOS>RIGHTLIMIT THEN ROADPOS=RIGHTLIMIT
330 IF ROADPOS<LEFTLIMIT THEN ROADPOS=LEFTLIMIT
350 POSITION 1,0: ? ROAD$(ROADPOS,ROADPOS+37):A=USR(ADR(CODE
   $))
360 IF PEEK(R)>217 THEN POKE 40041+INT(RND(0)*36),128
430 X=STICK(1):IF (X=11 OR X=10 OR X=9) AND CARPOS>3 THEN C
   ARPOS=CARPOS-1
440 IF (X=7 OR X=6 OR X=5) AND CARPOS<37 THEN CARPOS=CARPOS
   +1
450 IF PEEK(40920+CARPOS) THEN 1000
550 POSITION CARPOS,23: ? CAR$:
560 SOUND 0,SPEED+40,2,8
570 IF (X=14 OR X=10 OR X=6) AND SPEED>0 THEN SPEED=SPEED-1
590 IF (X=13 OR X=9 OR X=5) AND SPEED<215 THEN SPEED=SPEED+
   1
600 IF SPEED=0 THEN 300
610 FOR X=1 TO SPEED STEP 4:NEXT X:GOTO 300
```

Game End

```
1000 VOL=15:FOR Y=0 TO 4:FOR X=0 TO 32:POSITION CARPOS,23
1010 ? CHR$(X)::SOUND 0,20,0,VOL:VOL=VOL-0.09:NEXT X:NEXT Y
1020 FOR X=0 TO 25: ? :NEXT X
1030 ? "SCORE=▲":SCORE: ? : ? : ? "AT ▲LEVEL ▲:":DIFFICULTY: ? : ?
1040 ? : ? : ? "PRESS ▲START ▲FOR ▲ANOTHER ▲GAME"
1050 IF PEEK(53279)<>6 THEN 1050
1060 GOTO 21000
```

Game start

```
2000 POKE 752,1: ? CHR$(125):FOR X=1 TO 30:POSITION 1,0: ? ROA
   D$(16,53)::A=USR(ADR(CODE$)):NEXT X
2010 CARPOS=22:POSITION CARPOS,23: ? CAR$:SOUND 0,240,2,8
2020 POSITION 17,18: ? "■START■";
2030 GOSUB 21200:IF NOT STRIG(1) THEN 2070
2040 POSITION 17,18: ? "■STOP■";
2050 GOSUB 21200:IF NOT STRIG(1) THEN 2070
2060 GOTO 2020
```

```

2070 POSITION 17,18: ? " ^^^^^^ ": : POSITION 18,19: ? " ^^^^^
^": :
POSITION CARPOS,23: ? " ^ ":
2080 GOTO 300

```

Initialize game

```

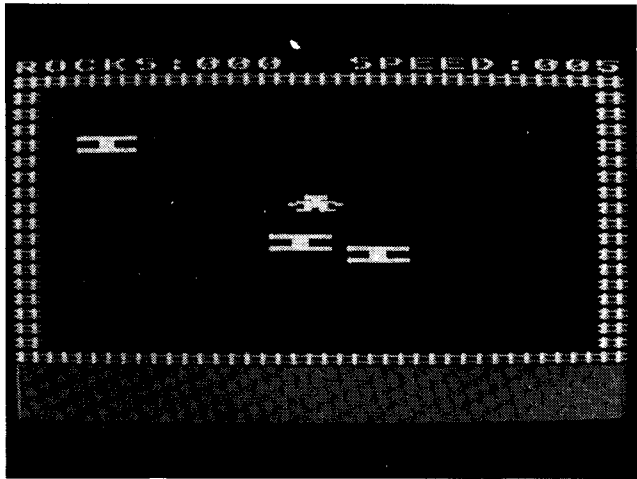
20000 POKE 82,1: ? CHR$(125): DIM ROAD$(120),CAR$(1)
20010 ROAD$=" ^^^^^^ "
20020 CAR$=CHR$(123)
20030 LEFTLIMIT=4
20040 RIGHTLIMIT=30
20050 DIM CODE$(58)
20060 DATA 104,169,176,133,203,169,159,133,204,169,216,133,20
5,169,159,133,206,162,22,160
20061 DATA 40,177,203,145,205,136,16,249,165,203,56,233,40,13
3,203,165,204,233,0
20062 DATA 133,204,165,205,56,233,40,133,205,165,206,233,0,13
3,206,202,16,218,96
20080 FOR X=1 TO 58: READ Y: CODE$(X,X)=CHR$(Y): NEXT X
20090 SETCOLOR 4,8,6
20100 SETCOLOR 2,4,15
21000 POKE 752,0: ? : ? : ? " ^^^^^^ RACER ^^^^^^ "
21010 ? : ? : ? : ? "SELECT ^DIFFICULTY ^LEVEL ^(^1-5)": : INPUT DIFF
ICULTY
21020 IF DIFFICULTY AND DIFFICULTY>5 THEN ? : ? "PLEASE ^....."
: GOTO 21010
21021 ? : ? "STEER ^CAR ^WITH ^JOYSTICK ^2"
21022 ? : ? "FORWARD ^= ^FASTER ^BACK ^= ^SLOWER": ?
21030 ? : ? "PRESS ^FIRE ^BUTTON ^TO ^START ^CAR ^MOVING": ? : ?
21040 ROADPOS=16
21050 SPEED=215
21060 R=53770
21100 POSITION 14,23
21110 ? " ^PRESS ^START ":
21120 GOSUB 21200: IF F THEN 2000
21130 POSITION 14,23
21140 ? " ^PRESS ^START ":
21150 GOSUB 21200: IF F THEN 2000
21160 GOTO 21100
21200 F=0: FOR X=0 TO 100
21210 IF PEEK(53279)=6 THEN F=1
21220 NEXT X: RETURN

```


ChexSum Tables

10 = 114	2000 = 3257	21010 = 2516
300 = 2154	2010 = 1499	21020 = 1553
320 = 1307	2020 = 1143	21021 = 1917
330 = 734	2030 = 751	21022 = 2364
350 = 1780	2040 = 1783	21030 = 3045
360 = 1447	2050 = 751	21040 = 353
430 = 2425	2060 = 175	21050 = 363
440 = 1863	2070 = 1969	21060 = 504
450 = 623	2080 = 114	21100 = 296
550 = 576	20000 = 1520	21110 = 2505
560 = 625	20010 = 10262	21120 = 467
570 = 1776	20020 = 540	21130 = 296
590 = 1853	20030 = 337	21140 = 1097
600 = 326	20040 = 380	21150 = 467
610 = 894	20050 = 448	21160 = 131
1000 = 1557	20060 = 4020	21200 = 634
1010 = 1843	20061 = 3547	21210 = 959
1020 = 632	20062 = 3545	21220 = 226
1030 = 2001	20080 = 1921	
1040 = 2241	20090 = 358	
1050 = 773	20100 = 367	
1060 = 130	21000 = 6730	
		TOTAL = 92784

ROCKS



CLASSIFICATION: Evasion

Move your ship round the room without crashing into the nasty monsters bouncing off the walls. Every time you hit one the computer will print BANG. Try to live as long as possible

PROGRAMMING SUGGESTIONS

Put obstacles in the path of you and the monsters. Increase the speed of the game.

Program Variables

I	General purpose
X1	X co-ordinate of you
Y1	Y co-ordinate of you
X2	X co-ordinate of rock one
Y2	Y co-ordinate of rock one
X3	X co-ordinate of rock two
Y3	Y co-ordinate of rock two
X4	X co-ordinate of rock three
Y4	Y co-ordinate of rock three

Program Structure

2	-	85	Initialize the program
100	-	130	Data for players
200	-	630	Set up sprites
1000	-	1040	Main loop
2000	-	2205	Move your player
3000	-	5999	Move the rocks
7000	-	8000	Do collision testing
9000	-	9090	Data for machine language program

Listing

```
2      CLR
6      FOR I=30720 TO 30799:READ A:POKE I,A:NEXT I
7      FOR I=33792 TO 33792+1023:POKE I,0:NEXT I
9      FOR I=28672 TO 29050:READ A:POKE I,A:NEXT I
10     POKE 106,128
20     PM=PEEK(106):PMBASE=PM*256
30     GRAPHICS 1
40     POKE 559,62
50     POKE 53277,3
60     POKE 54279,PM
70     POKE 53256,2
80     POKE 704,77:POKE 705,77:POKE 706,77
85     POKE 707,77
100    DATA 56,56,16,124,186,56,40,108,0,0,0,0,0,0,0,0,0,0,0,0
110    DATA 255,255,24,24,24,24,255,255,0,0,0,0,0,0,0,0,0,0,0,0
120    DATA 255,255,24,24,24,24,255,255,0,0,0,0,0,0,0,0,0,0,0,0
130    DATA 255,255,24,24,24,24,255,255,0,0,0,0,0,0,0,0,0,0,0,0
200    POKE 53256,1
210    POKE 53257,1
220    POKE 53258,1
230    POKE 53259,1
500    X1=140:Y1=100:REM SET PLAYER COOR
510    X2=INT(RND(0)*150):Y2=INT(RND(0)*150)
520    XP2=4:YP2=4
530    X3=INT(RND(0)*150):Y3=INT(RND(1)*150)
540    XP3=4:YP3=4
550    X4=INT(RND(0)*150):Y4=INT(RND(1)*150)
560    XP4=4:YP4=4
570    A=USR(28672,X1,Y1,X2,Y2,X3,Y3,X4,Y4)
600    FOR I=32128 TO 32128+19:POKE I,3:NEXT I
610    FOR I=32128+380 TO 32128+380+19:POKE I,3:NEXT I
620    FOR I=32128 TO 32128+380 STEP 20:POKE I,3:NEXT I
630    FOR I=32128+19 TO 32128+380 STEP 20:POKE I,3:NEXT I
1000   GOSUB 2000:REM MOVE YOU
1010   GOSUB 3000:REM MOVE 1
1020   GOSUB 4000:REM MOVE 2
1030   GOSUB 5000:REM MOVE 3
1035   A=USR(28672,X1,Y1,X2,Y2,X3,Y3,X4,Y4)
1037   GOSUB 7000
1040   GOTO 1000
2000   REM MOVE YOUR PLAYER
2010   POKE 53278,0:A=STICK(1)
2020   IF A=11 THEN GOSUB 2100
2030   IF A=7 THEN GOSUB 2200
2040   RETURN
2100   IF X1<5 THEN RETURN
2105   X1=X1-4:RETURN
2200   IF X1>140 THEN RETURN
2205   X1=X1+4:RETURN
3000   REM MOVE ROCK ONE
3005   IF X2>140 THEN XP2=-4
```

```

3010 IF X2<5 THEN XP2=4
3015 IF Y2>155 THEN YP2=-4
3020 IF Y2<5 THEN YP2=4

3025 X2=X2+XP2:Y2=Y2+YP2:RETURN
4000 REM MOVE ROCK TWO
4005 IF X3>140 THEN XP3=-4
4010 IF X3<5 THEN XP3=4
4015 IF Y3>155 THEN YP3=-4
4020 IF Y3<5 THEN YP3=4
4025 X3=X3+XP3:Y3=Y3+YP3:RETURN
4999 RETURN

5000 REM MOVE ROCK THREE
5005 IF X4>140 THEN XP4=-4
5010 IF X4<5 THEN XP4=4
5015 IF Y4>155 THEN YP4=-4
5020 IF Y4<5 THEN YP4=4
5025 X4=X4+XP4:Y4=Y4+YP4:RETURN
5999 RETURN

7000 REM
7010 IF PEEK(53260)<>0 THEN GOSUB 8000
7020 RETURN

8000 POSITION 0,0:PRINT #6:"":PRINT #6:"# ^^^^^^BANG"
8010 FOR I=1 TO 200:NEXT I:POSITION 0,1:PRINT #6:"# ^^^^^^
      ^^^^^^";
8020 POKE 53278,0:RETURN
9000 DATA 104,104,104,141,61,113,104,104,141,60,113,104,104,
141,75,113,104,104,141,74
9005 DATA 113,104,104,141,89,113,104,104,141,88,113,104,104,
141,103,113,104,104,141,102
9010 DATA 113,32,45,112,96,120,32,8,113,160,14,162,0,189,53,
113,149,176,232,136
9015 DATA 208,247,32,170,112,160,14,162,0,181,176,157,53,113
,232,136,208,247,160,14
9020 DATA 162,0,189,67,113,149,176,232,136,208,247,32,170,11
2,160,14,162,0,181,176
9025 DATA 157,67,113,232,136,208,247,160,14,162,0,189,81,113
,149,176,232,136,208,247
9030 DATA 32,170,112,160,14,162,0,181,176,157,81,113,232,136
,208,247,160,14,162,0
9035 DATA 189,95,113,149,176,232,136,208,247,32,170,112,160,
14,162,0,181,176,157,95
9040 DATA 113,232,136,208,247,32,22,113,88,96,165,183,197,18
2,240,68,160,0,165,184
9045 DATA 24,105,46,145,176,169,32,24,101,182,168,166,185,16
9,0,145,178,200,202,16
9050 DATA 250,169,32,24,101,183,141,116,113,162,0,142,109,11
3,166,185,172,109,113,177
9055 DATA 180,238,109,113,172,116,113,145,178,238,116,113,20
2,16,237,165,183,133,182,165
9060 DATA 184,133,189,96,165,184,197,189,208,182,96,173,112,
113,41,15,170,189,36,113
9065 DATA 238,112,113,96,160,14,162,0,181,176,157,117,113,23
2,136,208,247,96,160,14
9070 DATA 162,0,189,117,113,149,176,232,136,208,247,96,1,2,3
,4,5,10,7,8
9075 DATA 7,8,11,4,2,4,1,4,8,0,208,0,132,0,120,0,0,0,8,0

```

```

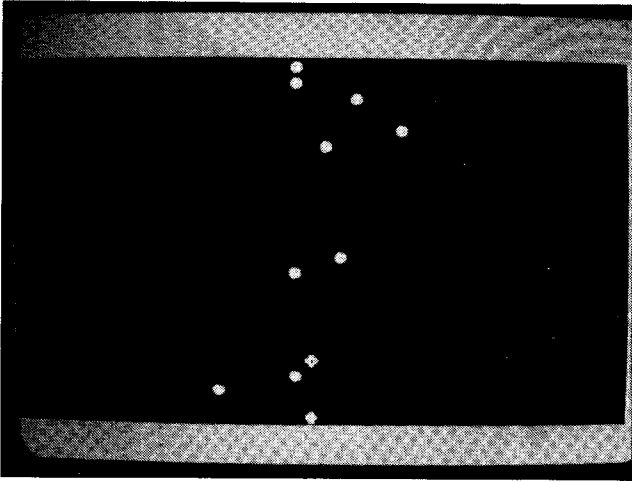
9080 DATA 16,0,0,1,208,0,133,20,120,0,0,0,8,0,16,0,0,2,208,0
9085 DATA 134,40,120,0,0,0,8,0,16,0,0,3,208,0,135,60,120,0,0
,0
9090 DATA 8,0,0,0,0,0,0,79,0,0,0,0,0,0,0,141,30,208

```

ChexSum Tables

2 = 40	620 = 1464	5020 = 667
6 = 1356	630 = 1620	5025 = 1270
7 = 1421	1000 = 918	5999 = 58
9 = 1627	1010 = 728	7010 = 756
10 = 277	1020 = 745	7020 = 58
20 = 1124	1030 = 762	8000 = 1160
30 = 144	1035 = 2321	8010 = 1723
40 = 420	1037 = 225	8020 = 420
50 = 406	1040 = 127	9000 = 3800
60 = 473	2010 = 887	9005 = 3900
70 = 372	2020 = 463	9010 = 3548
80 = 1169	2030 = 454	9015 = 3747
85 = 361	2040 = 58	9020 = 3711
100 = 2555	2100 = 357	9025 = 3824
110 = 2600	2105 = 581	9030 = 3638
120 = 2600	2200 = 419	9035 = 3778
130 = 2600	2205 = 580	9040 = 3730
200 = 371	3005 = 766	9045 = 3719
210 = 372	3010 = 649	9050 = 3845
220 = 373	3015 = 789	9055 = 4013
230 = 374	3020 = 651	9060 = 3852
500 = 2022	3025 = 1222	9065 = 3760
510 = 1696	4005 = 774	9070 = 3163
520 = 704	4010 = 657	9075 = 2355
530 = 1769	4015 = 797	9080 = 2537
540 = 712	4020 = 659	9085 = 2637
550 = 1777	4025 = 1246	9090 = 2191
560 = 720	4999 = 58	
570 = 2321	5005 = 782	
600 = 1205	5010 = 665	
610 = 1731	5015 = 805	
		TOTAL = 130781

SNOWBALL



CLASSIFICATION: Evasion

Use joystick to move the man left and right. Shoot snowballs before they land by pressing the fire button.

PROGRAMMING SUGGESTIONS

Make the snowballs travel down the screen in random paths instead of straight lines.

Program Variables

A	Local to set up USR routine
BALL\$	Code for snowballs
BALLPOS	Ball position
CODE\$	Holds machine code screen scroll routine
DIR	Direction group moves
FIREFLAG	=1 if missile fired
GROUP	Base position for snowballs
HITS	Counts hits
L	Local
LEVEL	Difficulty level
MISSILE\$	String for missile
MISSX	Missile X co-ordinate
MISSY	Missile Y co-ordinate
PLAYERPOS	Position of player
SCORE	Score
SCREEN	Address of first byte of video RAM
SPACE\$	40 spaces
T	Local
X	Local

Program Structure

1 -	3	Set the colors
10		Switch off cursor and jump to initialize
100 -	280	Main loop
1000 -	1060	The hit routine
2000 -	2060	The die routine
3000		Overrun by a snowball
3010 -	3030	Start the game
20000 -	21010	Initialize the game

Listing

```
1   SETCOLOR 1,0,15
2   SETCOLOR 4,0,9
3   SETCOLOR 2,0,0
10  POKE 752,1:POKE 82,0:GOTO 20000
```

Main loop

```
100  POSITION 0,0: ? SPACE#
102  GROUP=GROUP+DIR:IF GROUP<0 THEN GROUP=0:DIR=-DIR
103  IF GROUP>29 THEN GROUP=29:DIR=-DIR
110  IF LEVEL>RND(0)*20 THEN POSITION RND(0)*10+GROUP,0: ? BA
    LL#:HITS=HITS-1:IF HITS<0 THEN 3000
130  X=STICK(1):IF X=11 AND PLAYERPOS>1 THEN PLAYERPOS=PLAYE
    RPOS-1
140  IF X=7 AND PLAYERPOS<38 THEN PLAYERPOS=PLAYERPOS+1
150  IF ( NOT STRIG(1) ) AND ( NOT FIREFLAG ) THEN FIREFLAG=1:
    MISSX=PLAYERPOS:MISSY=22
```

Put missile if required

```
200  IF FIREFLAG THEN POKE SCREEN+MISSX+40*MISSY,0
210  A=USR(ADR(CODE$))
220  IF PEEK(SCREEN+920+PLAYERPOS) THEN 2000
230  POKE SCREEN+920+PLAYERPOS,123
240  IF FIREFLAG AND PEEK(SCREEN+MISSX+(40*MISSY)) THEN GOSU
    B 1000
250  IF FIREFLAG THEN MISSY=MISSY-1:IF MISSY=-1 THEN FIREFLA
    G=0
260  IF FIREFLAG AND PEEK(SCREEN+MISSX+(40*MISSY)) THEN GOSU
    B 1000
270  IF FIREFLAG THEN POKE SCREEN+MISSX+40*MISSY,80
280  GOTO 100
```

The hit routine

```
1000  L=SCREEN+MISSX+40*MISSY:FOR X=0 TO 32
1020  POKE L,X
1040  SOUND 0,255-7*X,10,8
1050  NEXT X:SOUND 0,0,0,0:POKE L,0
1060  HITS=HITS+1:SCORE=SCORE+1:FIREFLAG=0:RETURN
```

The die routine

```

2000 FOR X=0 TO 255:SOUND 0,X,10,8:SOUND 1,X+120,10,8:SOUND
2,X+2,10,8:SOUND 3,X+3,10,8:NEXT X
2010 FOR X=255 TO 0 STEP -6:SOUND 0,X,10,8:SOUND 1,X+1,10,8:
NEXT X
2020 FOR X=0 TO 3:SOUND X,0,0,0:NEXT X
2030 FOR X=15 TO 0 STEP -1:SOUND 0,50,0,X:FOR Y=1 TO 4:NEXT
Y:NEXT X
2040 FOR X=0 TO 23:? :NEXT X
2050 ? :? :? "A_SNOWBALL_HAS_LANDED_ON_YOUR_HEAD":? :? "AND_
YOUR_BRAIN_FREEZES":FOR X=1 TO 100:NEXT X
2060 ? :? :? "SCORE_";SCORE:? :? "LEVEL_";LEVEL:? :? :GOTO 3
010

```

Overrun by a snowball

```

3000 FOR X=1 TO 30:? :NEXT X:? CHR$(125):? :? :? :? "60_SNOW
BALLS_HAVE_LANDED":? :? :? "SCORE=";SCORE:? :? "AT_LEVE
L_";LEVEL
3010 ? :? "PRESS_FIRE_FOR_ANOTHER_GAME"
3020 IF STRIG(1) THEN 3020
3030 RUN

```

Initialize the game

```

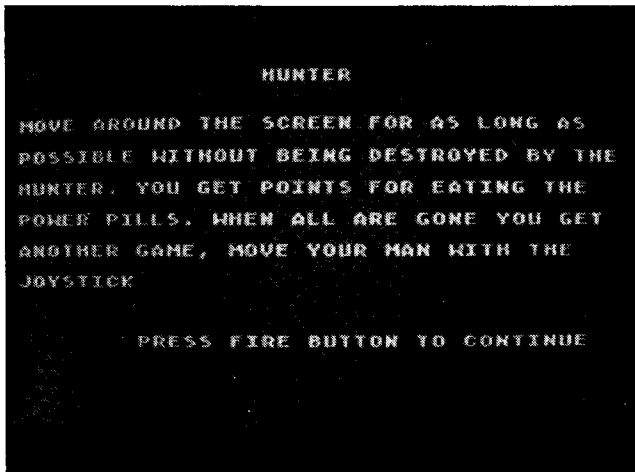
20000 DIM CODE$(58),BALL$(1),SPACE$(40),MISSILE$(1)
20011 BALLPOS=20:BALL#=CHR$(20):MISSILE#=CHR$(16)
20012 SPACE$="
*****
*****"
20013 SCREEN=40000
20014 DIR=0.25
20015 SCORE=0
20016 HITS=60
20030 REM
20040 ? CHR$(125)
20041 ? :? :? :? "LEVEL_";:INPUT LEVEL:? :?
20050 ? "USE_JOYSTICK_2":? :? :? "PRESS_FIRE_TO_START_GAME"
20060 DATA 104,169,176,133,203,169,159,133,204,169,216,133,20
5,169,159,133,206,162,22,160
20061 DATA 40,177,203,145,205,136,16,249,165,203,56,233,40,13
3,203,165,204,233,0
20062 DATA 133,204,165,205,56,233,40,133,205,165,206,233,0,13
3,206,202,16,218,96
20070 FOR X=1 TO 58:READ T:CODE$(X,X)=CHR$(T):NEXT X
21000 IF STRIG(1) THEN 21000
21001 PLAYERPOS=20:FIREFLAG=0
21002 ? CHR$(125)
21003 IF NOT STRIG(1) THEN 21003
21010 GOTO 100

```

ChexSum Tables

1 = 298	280 = 112	20012 = 1585
2 = 289	1000 = 1344	20013 = 344
3 = 214	1020 = 347	20014 = 365
10 = 809	1040 = 779	20015 = 278
100 = 326	1050 = 664	20016 = 428
102 = 1550	1060 = 1469	20040 = 343
103 = 1178	2000 = 3558	20041 = 1103
110 = 2481	2010 = 2082	20050 = 3057
130 = 1704	2020 = 898	20060 = 4020
140 = 1176	2030 = 2001	20061 = 3547
150 = 1959	2040 = 640	20062 = 3545
200 = 952	2050 = 5158	20070 = 1955
210 = 736	2060 = 2006	21000 = 419
220 = 807	3000 = 5400	21001 = 662
230 = 654	3010 = 2063	21002 = 343
240 = 1302	3020 = 480	21003 = 462
250 = 1393	3030 = 59	21010 = 112
260 = 1302	20000 = 1520	
270 = 1144	20011 = 1507	TOTAL = 74929

HUNTER



CLASSIFICATION: Invader/Evasion

You are a wild animal being pursued by a hunter. You move around the maze using the joystick on port one. No matter where you are in the maze, the hunter will know where you are and seek you out. As you move through the maze you eat munchies. When you have eaten all the munchies, you win. There are four levels.

PROGRAMMING SUGGESTIONS

Add a facility at the hardest level of the game so that the player can 'teleport' to another part of the board. However make it so that he cannot control his destination.

Program Variables

JL	Screen value of block character
SP	Screen value of blank character
DO	Screen value of power pill
C1	Column position of hunter
R1	Row position of hunter
R	Row position of animal
C	Column position of animal
A	Joystick direction
CN	Number of power pills eaten

Program Structure

15 -	40	Initialization
50 -	200	Draw borders, maze and power pills
210 -	560	Move your piece up, down, left and right
570 -	870	You ran into the hunter; you won the game

Listing

1 SETCOLOR 2,1,3:POKE 752,1

Initialization

```
15 CLR :DIM A$(4),B$(1),C$(3),E$(3),CC$(40),RR$(24),DR$(1)
    ,TAB$(40),F$(32)
16 DIM D$(30)
20 PRINT CHR$(125);
21 POKE 82,0
22 DR$(1)=">":JL=128:REM SET BLOCK CHARACTER
23 SP=0:REM SET ASCII VALUE OF SPACE CHARACTER
24 DO=84:REM ASCII VALUE OF POWER PILL
25 FOR I=1 TO 40:TAB$(I,I)=DR$:NEXT I
26 YO=10:REM ASCII VALUE OF YOUR PLAYER
27 MO=56:REM ASCII VALUE OF MONSTER
30 GOSUB 710
40 GOSUB 850
```

Draw borders, maze and power pills

```
50 PRINT CHR$(125);
60 SC=40000:CO=0:BE=SC+207
70 A$(1,2)="███":B$(1,1)="▲":C$(1,2)=A$:C$(3,3)=B$
80 E$(1,3)="▲▲▲"
90 FOR I=1 TO 40:CC$(I,I)=">":NEXT I
100 FOR I=1 TO 24:RR$(I,I)="↓":NEXT I
110 FOR I=SC TO SC+39:POKE I,128:POKE I+920,128:NEXT I
120 FOR I=SC TO SC+999 STEP 40:POKE I,128:POKE I+39,128:NEXT I
130 POSITION 0,0:PRINT TAB$(1,18);"HUNTER";
140 FOR I=1 TO 25 STEP 3:F$(I,I+2)=E$:NEXT I
150 FOR I=1 TO 30 STEP 3:D$(I,I+2)=C$:NEXT I:PRINT :PRINT :PRINT :PRINT
160 FOR I=1 TO 5:PRINT TAB$(1,7);D$:PRINT TAB$(1,7);D$:PRINT TAB$(1,7);F$:NEXT I
170 PRINT TAB$(1,7);D$:PRINT TAB$(1,7);D$
180 R=2:C=0:POKE SC,128
190 PO=BE+(R*40)+C:POKE PO,YO
200 C1=26:R1=16:P1=BE+(R1*40)+C1:VE=PEEK(P1):POKE P1,MO
```

Move your piece up, down, left and right

```
210 A=STICK(1):IF A=14 THEN GOSUB 370
220 IF A=13 THEN GOSUB 420
230 IF A=11 THEN GOSUB 470
```

```

240 IF A=7 THEN GOSUB 520
250 GOSUB 290
260 IF CN=45 THEN GOSUB 640:GOTO 10
270 POSITION 16,3:PRINT "SCORE";S1;
280 GOTO 210
290 IF SW<>AW THEN SW=SW+1:RETURN
300 SW=0
310 PC=P1:IF C1<C THEN C2=C1:C1=C1+1:P1=BE+(R1*40)+C1:IF PE
EK(P1)=JL THEN C1=C2:P1=PC
320 IF C1>C THEN C2=C1:C1=C1-1:P1=BE+(R1*40)+C1:IF PEEK(P1)
=JL THEN C1=C2:P1=PC
330 IF R1<R THEN R2=R1:R1=R1+1:P1=BE+(R1*40)+C1:IF PEEK(P1)
=JL THEN R1=R2:P1=PC
340 IF R1>R THEN R2=R1:R1=R1-1:P1=BE+(R1*40)+C1:IF PEEK(P1)
=JL THEN R1=R2:P1=PC
350 POKE PC,VE:VE=PEEK(P1):IF VE=Y0 THEN GOSUB 600:GOTO 10
360 POKE P1,M0:RETURN
370 IF R=0 THEN RETURN
380 T1=PO:R=R-1:PO=BE+(R*40)+C:IF PEEK(PO)=JL THEN PO=T1:R=
R+1:RETURN
390 IF PEEK(PO)=13 THEN GOSUB 570
400 IF PEEK(PO)=D0 THEN S1=S1+1:CN=CN+1
410 POKE T1,SP:POKE PO,Y0:RETURN
420 IF R=16 THEN RETURN
430 T1=PO:R=R+1:PO=BE+(R*40)+C:IF PEEK(PO)=JL THEN PO=T1:R=
R-1:RETURN
440 IF PEEK(PO)=D0 THEN S1=S1+1:CN=CN+1
450 IF PEEK(PO)=M0 THEN GOSUB 570
460 POKE T1,SP:POKE PO,Y0:RETURN
470 IF C=0 THEN RETURN
480 T1=PO:C=C-1:PO=BE+(R*40)+C:IF PEEK(PO)=JL THEN C=C+1:PO
=T1:RETURN
490 IF PEEK(PO)=D0 THEN CN=CN+1:S1=S1+1
500 IF PEEK(PO)=M0 THEN GOSUB 570
510 POKE T1,SP:POKE PO,Y0:RETURN
520 IF C=28 THEN RETURN
530 T1=PO:C=C+1:PO=BE+(R*40)+C:IF PEEK(PO)=JL THEN C=C-1:PO
=T1:RETURN
540 IF PEEK(PO)=D0 THEN CN=CN+1:S1=S1+1
550 IF PEEK(PO)=M0 THEN GOSUB 570
560 POKE T1,SP:POKE PO,Y0:RETURN

```

You ran into the hunter;
you won the game

```

570 PRINT CHR$(125);:PRINT "YOU▲RAN▲STRAIGHT▲INTO▲THE▲HUNTE
R!!!"
580 PRINT :PRINT :PRINT TAB$(1,13);"YOU▲ATE▲";CN
590 PRINT :PRINT :GOSUB 680:GOTO 10
600 PRINT CHR$(125);:PRINT "▲▲▲YOU▲WERE▲CAPTURED▲BY▲THE▲HUN
TER!!!!!!!!":PRINT :PRINT
610 PRINT TAB$(1,10);"YOU▲ATE▲";CN;"▲POWER▲PILLS":PRINT :PR
INT
620 GOSUB 680
630 RETURN
640 PRINT CHR$(125);
650 PRINT CHR$(125);TAB$(1,13);"CONGRATULATIONS"

```

```

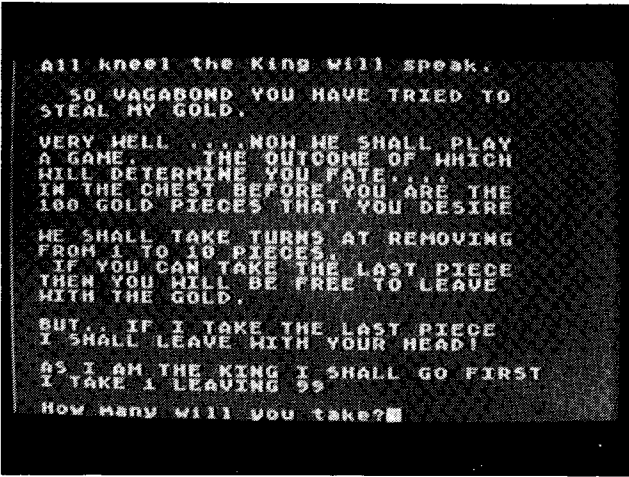
660 PRINT :PRINT :PRINT :PRINT TAB$(1,5); "YOU ▲HAVE ▲COMPLETE
D ▲LEVEL:";TY
670 PRINT :PRINT :GOSUB 680:RETURN
680 PRINT TAB$(1,8); "PRESS ▲FIRE ▲BUTTON ▲TO ▲CONTINUE";:FOR I=
1 TO 20:A=STRIG(1):NEXT I
690 A=STRIG(1):IF A=1 THEN 690
700 RETURN
710 PRINT CHR$(125);:PRINT TAB$(1,16); "HUNTER"
720 PRINT :PRINT :PRINT "MOVE ▲AROUND ▲THE ▲SCREEN ▲FOR ▲AS ▲LONG
▲AS":PRINT
730 PRINT "POSSIBLE ▲WITHOUT ▲BEING ▲DESTROYED ▲BY ▲THE":PRINT
740 PRINT "HUNTER. ▲YOU ▲GET ▲POINTS ▲FOR ▲EATING ▲THE":PRINT
750 PRINT "POWER ▲PILLS. ▲WHEN ▲ALL ▲ARE ▲GONE ▲YOU ▲GET":PRINT
760 PRINT "ANOTHER ▲GAME, ▲MOVE ▲YOUR ▲MAN ▲WITH ▲THE":PRINT
770 PRINT "JOYSTICK":PRINT
780 PRINT :PRINT
830 GOSUB 680
840 RETURN
850 PRINT CHR$(125);:PRINT "DIFFICULTY ▲LEVEL ▲(1-4)":
860 INPUT A$:IF A$<"1" OR A$>"4" THEN 860
870 TY=VAL(A$):AW=4-TY:RETURN

```

ChexSum Tables

1 = 709	240 = 482	560 = 821
15 = 3374	250 = 259	570 = 2875
16 = 408	260 = 737	580 = 1435
20 = 356	270 = 1752	590 = 532
21 = 293	280 = 129	600 = 3226
22 = 2413	290 = 1035	610 = 2390
23 = 2783	300 = 292	620 = 247
24 = 2388	310 = 4542	630 = 58
25 = 1534	320 = 4063	640 = 356
26 = 2369	330 = 4067	650 = 2026
27 = 2160	340 = 4069	660 = 2739
30 = 136	350 = 1703	670 = 457
40 = 201	360 = 434	680 = 4071
50 = 356	370 = 305	690 = 1128
60 = 1229	380 = 3875	700 = 58
70 = 3146	390 = 744	710 = 1440
80 = 674	400 = 1689	720 = 2872
90 = 1448	410 = 821	730 = 2971
100 = 1419	420 = 391	740 = 2764
110 = 1825	430 = 3875	750 = 2776
120 = 2138	440 = 1689	760 = 2658
130 = 1225	450 = 784	770 = 772
140 = 1761	460 = 821	780 = 115
150 = 2347	470 = 306	830 = 247
160 = 2879	480 = 3887	840 = 58
170 = 1387	490 = 1689	850 = 1933
180 = 1028	500 = 784	860 = 949
190 = 1439	510 = 821	870 = 1250
200 = 2966	520 = 410	
210 = 1154	530 = 3887	
220 = 493	540 = 1689	
230 = 571	550 = 784	
		TOTAL = 144648

TAKEAWAY



All kneel the King will speak.
SO UAGABOND YOU HAVE TRIED TO
STEAL MY GOLD.
VERY WELL ... NOW WE SHALL PLAY
A GAME. THE OUTCOME OF WHICH
WILL DETERMINE YOUR FATE. ...
IN THE CHEST BEFORE YOU ARE THE
100 GOLD PIECES THAT YOU DESIRE
WE SHALL TAKE TURNS AT REMOVING
FROM 1 TO 10 PIECES.
IF YOU CAN TAKE THE LAST PIECE
THEN YOU WILL BE FREE TO LEAVE
WITH THE GOLD.
BUT... IF I TAKE THE LAST PIECE
I SHALL LEAVE WITH YOUR HEAD!
AS I AM THE KING I SHALL GO FIRST
I TAKE 1 LEAVING 99
How many will you take?■

CLASSIFICATION: Logic

You and the computer take turns at removing gold pieces from a chest. The player with no pieces to remove loses his head. The game is self prompting. Note: The game can't lose. Use this to show your friends how 'smart' your computer is.

PROGRAMMING SUGGESTIONS

Music for introduction page. More ancient sounding insults etc.

Program Variables

CHEAT	Counts number of times player attempts to cheat
FLAG	Flag
GOLD	Number of gold pieces remaining
R	Local
R\$	Local string
TAKE	Number of pieces taken by player
X,Y,Z	Used in $z=x \bmod y$ routine

Program Structure

10	Initialize the game
20 - 130	Introductory text
1000 - 1060	Player's turn
1070 - 1130	Machine's turn
3000 - 3040	$X \bmod Y$ routine
5000 - 5050	Cheat routine
6000 - 7040	Game end
8000	You have attempted to cheat three times
9000 - 9060	Insult routine

Listing

Initialize the game

```
10 ? CHR$(125)::DIM R$(20):CHEAT=0:FLAG=0
20 ? "All _kneel _the _king _will _speak.":?
30 ? " _SO _VAGABOND _YOU _HAVE _TRIED _TO"
40 ? "STEAL _MY _GOLD."
50 ? :? "VERY _WELL _... _NOW _WE _SHALL _PLAY"
60 ? "A _GAME. _... _THE _OUTCOME _OF _WHICH"
70 ? "WILL _DETERMINE _YOU _FATE..."
80 ? "IN _THE _CHEST _BEFORE _YOU _ARE _THE":? "100 _GOLD _PIECES _
    THAT _YOU _DESIRE"
90 ? :? "WE _SHALL _TAKE _TURNS _AT _REMOVING"
100 ? "FROM _1 _TO _10 _PIECES."
110 ? " _IF _YOU _CAN _TAKE _THE _LAST _PIECE":? "THEN _YOU _WILL _BE
    _FREE _TO _LEAVE"
120 ? "WITH _THE _GOLD.":? :? "BUT... _IF _1 _TAKE _THE _LAST _PIECE
    ":? "1 _SHALL _LEAVE _WITH _YOUR _HEAD!"
130 ? :? "AS _I _AM _THE _KING _1 _SHALL _GO _FIRST":? "I _TAKE _1 _LE
    AVING _99"
```

Player turn

```
1000 GOLD=99
1020 IF CHEAT=3 THEN 8000
1025 GOSUB 9000: ? :? "How _many _will _you _take": INPUT TAKE: ?
1030 IF TAKE>GOLD THEN GOSUB 5000:GOTO 1020
1040 IF TAKE>10 THEN GOSUB 5000:GOTO 1020
1050 GOLD=GOLD-TAKE
1060 ? "You _have _taken _":TAKE;" _leaving _":GOLD: ?
1070 ? "We _will _take _":
1080 X=GOLD:Y=11:GOSUB 3000
1090 ? Z
1100 GOLD=GOLD-Z
1110 ? "Which _leaves _":GOLD
1120 IF GOLD=0 THEN 6000
1130 ? :? :GOTO 1020
```

X mod Y routine

```
3000 Z=X/Y
3010 Z=Z-INT(Z)
3020 Z=Z+1/(Y*10)
3030 Z=INT(Z*Y)
3040 RETURN
```

Cheat routine

```
5000 CHEAT=CHEAT+1:?:?:?:R=INT(RND(0)*4):ON R GOTO 5020,5
    030,5040,5050
5010 ? "THOU▲CHEAT...▲TAKE▲CARE!!!":RETURN
5020 ? "BE▲THOU▲BLIND▲OR▲FOOLISH":RETURN
5030 ? "HAVE▲THY▲WITS▲FLED▲THEE":RETURN
5040 ? "THOU▲CONSPIRE▲TO▲DEFRAUD▲ME..":?: "THEE▲SON▲OF▲A▲CEPH
    ALOPOD.":RETURN
5050 ? "GUARD▲THY▲HONOUR▲THOU▲VARLET.":RETURN
```

Game end

```
6000 ? :?:? "WHICH▲MEANS▲THAT▲I▲HAVE▲WON..."
6010 ? :?:? "OFF▲WITH▲HIS▲HEAD!!!!"
6020 ? "Are▲there▲any▲other▲theives"
6030 ? "wishing▲to▲play▲the▲Kings▲game":?:? "Y▲OR▲N":INPUT
    R$
6040 IF R$="N" OR R$="n" THEN 7000
6050 IF R$="Y" OR R$="y" THEN RUN
6060 GOSUB 5030:?:GOTO 6020
```

Final message

```
7000 ? :?:? "It▲is▲well▲that▲you▲have▲declined":? "to▲play▲
    the▲King."
7010 ? "As▲a▲palace▲guard▲I▲will▲tell▲you":? "that▲the▲King▲
    NEVER▲loses."
7020 ? :?:? "The▲King▲can't▲lose....."
7030 ? :?:? "FAREWELL...."
7040 END
```

You have attempted to cheat three times

```
8000 ? :?:? "YOU▲HAVE▲ANGERED▲ME▲WITH▲YOUR":? "FOOLISH▲ATTE
    MPTS▲TO▲CHEAT!!!":?:?:GOTO 6010
```

Insult routine

```
9000 IF FLAG=0 THEN FLAG=1:RETURN
9010 X=INT(RND(0)*5):ON X GOTO 9030,9040,9050,9060
9020 ? "Thy▲doom▲draws▲closer.":RETURN
9030 ? "Hast▲thy▲will▲been▲drawn?":RETURN
```

```

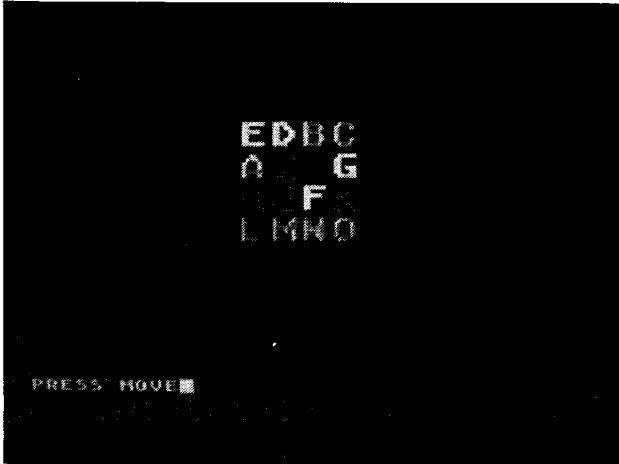
9040 ? "Choose,thou_▲noxious_▲vermin.":RETURN
9050 ? "Thee_▲suffer_▲nympholepsy.":RETURN
9060 ? "Halt_▲thy_▲procrastination_▲whelp.":RETURN

```

ChexSum Tables

10 = 1396	1080 = 944	6040 = 868
20 = 2908	1090 = 197	6050 = 756
30 = 2156	1100 = 556	6060 = 580
40 = 1038	1110 = 1445	7000 = 5031
50 = 2270	1120 = 410	7010 = 5479
60 = 2042	1130 = 307	7020 = 2100
70 = 1906	3000 = 562	7030 = 1022
80 = 4403	3010 = 746	7040 = 43
90 = 2367	3020 = 897	8000 = 4890
100 = 1329	3030 = 743	9000 = 655
110 = 4314	3040 = 58	9010 = 2248
120 = 5331	5000 = 2750	9020 = 2263
130 = 3679	5010 = 1782	9030 = 2516
1000 = 483	5020 = 1829	9040 = 2855
1020 = 507	5030 = 1759	9050 = 2567
1025 = 2885	5040 = 4023	9060 = 3258
1030 = 728	5050 = 2249	
1040 = 703	6000 = 2235	
1050 = 553	6010 = 1527	TOTAL = 113564
1060 = 2714	6020 = 2682	
1070 = 1256	6030 = 3764	

SORTGAME



CLASSIFICATION: Strategy

Object of game is to unscramble the board in the smallest possible number of moves. To make a move press the key that corresponds to the letter on the board that you wish to move.

PROGRAMMING SUGGESTIONS

The scramble routine could be sped up considerably by resorting to machine language.

Program Variables

A	Local
BOARD()	Holds board
CHR	Screen code for letters
DL	Local
M	Local
M1	Local
M2	Local
MOVES	Number of times board altered
MV	Local
SLOC	Address of video RAM
TOTAL	Count of moves made
VALID	Flags valid move
WHAT	Holds what to do from menu
X1	Local
Y	Local
Y1	Local
Z	Local

Program Structure

10	Jump to initialize routine
90	Select graphics mode
100 - 300	Main loop
1000 - 1050	End game
5000 - 5110	Draw board in GR.0
6000 - 6110	Draw board in GR.2
7000 - 7080	Make a move
20000 - 22160	Initialize the system

Listing

```
10 OPEN #1,4,0,"K:":GOTO 20000
```

Select graphics mode

```
90 GRAPHICS 2
```

Main loop

```
100 GOSUB 6000
110 ? CHR$(125)
111 SETCOLOR 4,3,3
120 ? "PRESS ▲MOVE";
130 GET #1,A
140 M=A-64
150 IF M<1 OR M>15 THEN 100
160 GOSUB 7000
180 IF VALID THEN TOTAL=TOTAL+1
200 Z=0:FOR X=1 TO 4:FOR Y=1 TO 4:IF BOARD(X,Y)<>Z THEN X=4
  :Y=4
210 Z=Z+1:NEXT Y:NEXT X
220 IF Z=16 THEN 1000
300 GOTO 100
```

End game

```
1000 GRAPHICS 0:GOSUB 5000
1010 POSITION 4,10: ? "COMPLETED ▲IN ▲";TOTAL;" ▲MOVES":IF MOVES
  =TOTAL THEN ? "PERFECT!"
1020 ? : ? : ? "PRESS ▲<RETURN> ▲FOR ▲ANOTHER ▲GAME"
1030 GET #1,A
1040 IF A<>155 THEN 1030
1050 RUN
```

Draw board in GR.0

```
5000 ? CHR$(125)
5010 FOR X=1 TO 4
5060 FOR Y=1 TO 4
5070 Z=BOARD(X,Y):IF Z=0 THEN ? " ▲▲";
5080 IF Z THEN ? CHR$(64+Z);" ▲";
5090 NEXT Y: ?
5100 NEXT X
5110 RETURN
```


Draw board in GR.2

```

6000 DL=PEEK(560)+PEEK(561)*256:SLOC=PEEK(DL+4)+PEEK(DL+5)*2
    56
6010 FOR X=1 TO 4
6060 FOR Y=1 TO 4
6070 Z=BOARD(X,Y):IF Z=0 THEN CHR=0
6080 IF Z THEN CHR=Z+32+(INT(Z/4)*64)
6090 POKE X*20+Y+SLOC+7+20,CHR
6100 NEXT Y:NEXT X
6110 RETURN

```

Make a move

```

7000 VALID=1
7010 FOR X=1 TO 4:FOR Y=1 TO 4:IF BOARD(X,Y)=M THEN X1=X:Y1=
    Y
7020 NEXT Y:NEXT X
7040 IF BOARD(X1-1,Y1)=0 THEN BOARD(X1-1,Y1)=M:BOARD(X1,Y1)=
    0:RETURN
7050 IF BOARD(X1+1,Y1)=0 THEN BOARD(X1+1,Y1)=M:BOARD(X1,Y1)=
    0:RETURN
7060 IF BOARD(X1,Y1+1)=0 THEN BOARD(X1,Y1+1)=M:BOARD(X1,Y1)=
    0:RETURN
7070 IF BOARD(X1,Y1-1)=0 THEN BOARD(X1,Y1-1)=M:BOARD(X1,Y1)=
    0:RETURN
7080 VALID=0:RETURN

```

Initialize the system

```

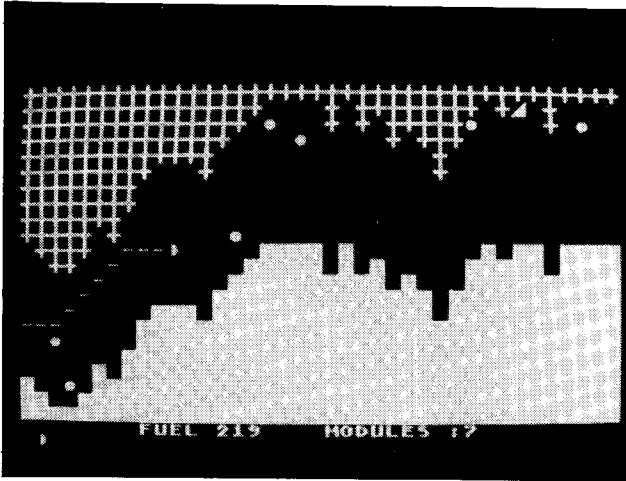
20000 DIM BOARD(5,5):FOR X=0 TO 5:FOR Y=0 TO 5:BOARD(X,Y)=99:
    NEXT Y:NEXT X
20010 Z=0:FOR X=1 TO 4:FOR Y=1 TO 4
20020 BOARD(X,Y)=Z:Z=Z+1:NEXT Y:NEXT X
21000 GRAPHICS 0:CHR$(125):? :? :? "SELECT":? :? :? "▲▲1▲=▲
    NEW▲BOARD":? :? "▲▲2▲=▲SCRAMBLE▲DISPLAY":?
21010 ? "▲▲3▲=▲SCRAMBLE":?:INPUT WHAT:IF WHAT<1 OR WHAT>3 TH
    EN 21000
22000 TOTAL=0:IF WHAT=1 THEN 90
22010 ? :? "HOW▲MANY▲MOVES▲TO▲SCRAMBLE":?:INPUT MOVES
22020 GRAPHICS 2
22100 M1=0:M2=0:FOR MV=1 TO MOVES
22110 M=INT(RND(0)*15)+1:IF M=M1 OR M=M2 THEN 22110
22120 GOSUB 7000:IF VALID=0 THEN 22110
22130 M2=M1:M1=M
22140 IF WHAT=2 THEN GOSUB 6000
22150 NEXT MV
22160 GOTO 90

```

ChexSum Tables

10 = 609	5000 = 343	7060 = 2659
90 = 145	5010 = 394	7070 = 2661
100 = 209	5060 = 395	7080 = 339
110 = 343	5070 = 1251	20000 = 2761
111 = 350	5080 = 856	20010 = 1142
120 = 848	5090 = 235	20020 = 1735
130 = 316	5100 = 164	21000 = 4317
140 = 594	5110 = 58	21010 = 1955
150 = 678	6000 = 2632	22000 = 832
160 = 225	6010 = 394	22010 = 2239
180 = 684	6060 = 395	22020 = 145
200 = 2803	6070 = 1365	22100 = 1081
210 = 872	6080 = 1540	22110 = 1765
220 = 417	6090 = 1104	22120 = 621
300 = 112	6100 = 338	22130 = 814
1000 = 293	6110 = 58	22140 = 524
1010 = 3000	7000 = 330	22150 = 176
1020 = 2451	7010 = 2555	22160 = 254
1030 = 316	7020 = 338	
1040 = 522	7040 = 2661	
1050 = 59	7050 = 2659	TOTAL = 61931

SLEFT



CLASSIFICATION: Evasion

The object of the game is to collect as many modules as possible. You also need to avoid mines, the roof and floor of the cave, and running out of fuel. Hitting a mine (solid circle) loses one man. Hitting a fuel container (*) adds 50 to your fuel. Modules are solid triangles. Joystick 1 controls movement.

PROGRAMMING SUGGESTIONS

Add enemy missiles to the game to make it more difficult. Make the missiles heat seeking and give the player some way of destroying them.

Program Variables

A	Used to set up machine code scroll routine
DL	Used to calculate starting address of video RAM
FLAG	Flag for sound effects
FLAG2	As above
FUEL	Remaining fuel
MEN	Number of men
OLDP	Old position of ship
P	Current position of ship
Q	Screen code of whatever the ship hits
R	=53770 Where to peek for a random number 0 - 255
SCREEN	Address of start of video RAM
SIZE	Height of cave
T	Local variable, many uses
U	What to put on screen
X\$	Local
XZ	Address of top right of screen
Y	Position of top of cave
YP	Vertical position of ship
Z	Local, many uses

Program Structure

10	Jump to initialize routine
100 - 250	Main loop
1000 - 1080	Setup machine language routine
2000 - 2070	Hit something
2300 - 2330	Game over
3000 - 3010	Collect Fuel
4000 - 4010	Collect module
5000 - 5040	Out of fuel
8000 - 8010	Display number of men left
20000 - 21080	Initialization routine

Listing

```
10 SETCOLOR 1,10,10:SETCOLOR 2,10,0: CHR$(125):GOTO 20000
```

Main loop

```
100 POKE 205,Y:POKE 206,SIZE:IF FLAG THEN SOUND 1,20,6,FLAG
:FLAG=FLAG-1
101 POSITION 13,22: FUEL;"_":FUEL=FUEL-1:IF NOT FUEL THE
N 5000
102 IF FLAG2 THEN FLAG2=FLAG2-2:SOUND 0,50,10,FLAG2
110 Z=INT(RND(0)*5)-2:Y=Y+Z:IF Y<1 THEN Y=1
121 T=0:IF PEEK(R)>191 THEN T=Y*40+INT(RND(0)*SIZE)*40+XZ:P
OKE T,84
123 U=10:IF PEEK(R)>127 THEN U=72
124 IF T AND PEEK(R)>191 THEN POKE T,U
130 IF Y+SIZE>21 THEN Y=21-SIZE
220 Z=USR(20527):Z=USR(20480)
225 Z=STICK(0):IF Z=14 AND YP THEN YP=YP-1
226 IF Z=13 AND YP<22 THEN YP=YP+1
230 OLDP=P:P=SCREEN+YP*40+10:POKE OLDP-1,13:Q=PEEK(P):IF Q
THEN 2000
250 POKE P,127:GOTO 100
```

Setup machine language routine

```
1000 RESTORE 1010:FOR T=20480 TO 20613:READ A:POKE T,A:NEXT
T:RETURN
1010 DATA 104,169,64,133,203,169,156,133,204,162,22,160,0,20
0,177,203,136,145,203,200
1020 DATA 152,201,40,208,244,136,169,0,145,203,165,203,24,10
5,40,133,203,165,204,105
1030 DATA 0,133,204,202,208,221,96
1040 DATA 104,169,103,133,203,169,156,133,204,165,205,170,16
0,0,169, 83,145,203,24,165
1050 DATA 203,105,40,133,203,165,204,105,0,133,204,202,208,2
36,165,206,170,24,165,203
1060 DATA 105,40,133,203,165,204,105,0,133,204,202,208,240,1
65,205,24,101,206,133,207
1070 DATA 56,169,22,229,207,170,169,128,145,203,24,165,203,1
05,40,133,203,165,204,105
1080 DATA 0,133,204,202,208,236,96
```

Hit something

```
2000 IF Q=10 THEN 3000
2010 IF Q=72 THEN 4000
2020 FOR T=15 TO 0 STEP -0.25
```

```

2030 POKE P,T:SOUND 1,50,0,T
2040 NEXT T
2050 MEN=MEN-1
2060 IF MEN=0 THEN 2300
2070 GOTO 21000
2300 ? CHR$(125):? :? :? "▲GAME▲OVER▲"
2310 SOUND 0,0,0,0:SOUND 1,0,0,0:? :? :? "▲▲▲YOU▲COLLECTED▲"
      ;MODULES;"▲MODULES"
2320 ? :? :? "PRESS▲◀RETURN>▲FOR▲ANOTHER▲GAME";:INPUT X$
2330 RUN

```

Collect Fuel

```

3000 SOUND 1,50,6,15:FUEL=FUEL+50:FLAG=15
3010 GOTO 100

```

Collect module

```

4000 MODULES=MODULES+1:POSITION 20,22:? "MODULES▲:";MODULES;
4010 FLAG2=14:GOTO 100

```

Out of fuel

```

5000 ? CHR$(125)
5010 POSITION 10,11:? "OUT OF FUEL"
5020 FOR T=255 TO 0 STEP -1
5030 SOUND 1,T,12,8:NEXT T
5040 SOUND 1,0,0,0:GOTO 2300

```

Display number of men left

```

8000 POSITION 1,23:? "▲▲▲":
8010 FOR T=1 TO MEN:POKE SCREEN+920+T,127:NEXT T:RETURN

```

Initialization routine

```

20000 GOSUB 1000:DIM X$(9):POKE 752,255
20010 DL=PEEK(560)+PEEK(561)*256
20020 SCREEN=PEEK(DL+4)+256*PEEK(DL+5)
20060 MODULES=0
20070 MEN=3
21000 Y=1:SIZE=9:POKE 205,Y:POKE 206,SIZE:FUEL=300:YP=4
21001 P=SCREEN+YP*40+10:OLDF=P
21010 FOR T=1 TO 40
21020 Z=USR(20527):Z=USR(20480)

```

```

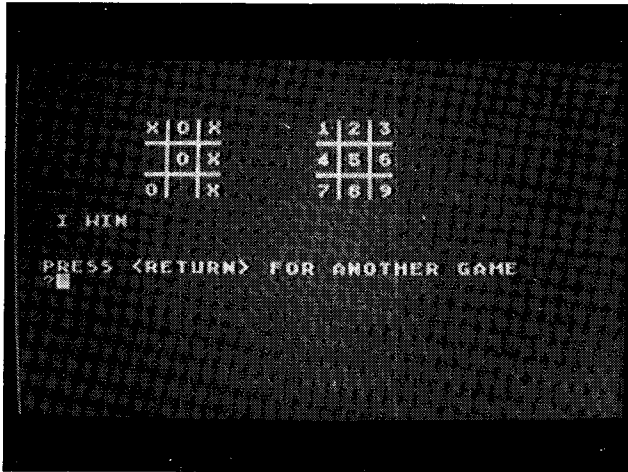
21030 NEXT T
21040 POSITION 8,22: ? "FUEL▲:";
21050 GOSUB 8000
21060 XZ=SCREEN+39
21070 R=53770
21080 GOTO 100

```

ChexSum Tables

10 = 1319	1070 = 3852	5030 = 721
100 = 1995	1080 = 1337	5040 = 438
101 = 1620	2000 = 460	8000 = 502
102 = 1293	2010 = 574	8010 = 1478
110 = 2224	2020 = 542	20000 = 985
121 = 2978	2030 = 900	20010 = 1220
123 = 1386	2040 = 166	20020 = 1400
124 = 1159	2050 = 540	20060 = 287
130 = 1062	2060 = 369	20070 = 353
220 = 1225	2070 = 130	21000 = 2204
225 = 1558	2300 = 1322	21001 = 1352
226 = 1203	2310 = 2827	21010 = 456
230 = 2871	2320 = 2698	21020 = 1225
250 = 472	2330 = 59	21030 = 166
1000 = 1710	3000 = 1608	21040 = 808
1010 = 3833	3010 = 112	21050 = 241
1020 = 3777	4000 = 1838	21060 = 584
1030 = 1331	4010 = 494	21070 = 515
1040 = 3884	5000 = 343	21080 = 112
1050 = 3820	5010 = 2890	
1060 = 3810	5020 = 574	TOTAL = 83212

OXO



CLASSIFICATION: Strategy

A standard noughts and crosses game. You play the computer.
This program is self prompting.

PROGRAMMING SUGGESTIONS

Use a cursor to input moves (see OTHELLO).

Program

Variables

A	Local
B	Local
C	Local
EVAL	1,-1 or 0 Evaluation win, loose or draw
FULL	=1 if no space on board
INDEX	Local, several uses
LOOP	Loop counter
MNUM	Local in evaluation routine
MOVE	Flags who's turn it is
MOVE()	Holds intermediate results
PM	Holds players move number
Q	Flag as in EVAL
R	Used if machine moves first

R\$	Local
SCORE()	Score table
T	Local, many uses
W	Local to print board routine
WORKBOARD()	Copy of PLAYBOARD()
X	Local
X\$	Local
Z	Local

Program Structure

10 - 10	Jump to initialization
5000 - 5190	Draw Board
6000 - 6230	Evaluate proposed move
7000 - 7030	Check if board full
8000 - 8010	Set scoring table
10000 - 10050	Evaluate subroutine

Listing

10 GOTO 20000

Get & do move

```
1000 ? CHR$(125):GOSUB 5000:GOSUB 7000:IF FULL=1 OR EVAL<>0
    THEN 12000
1010 POSITION 9,22:IF MOVE=1 THEN ? "MY MOVE":GOTO 2000
1020 ? "WHERE TO?":INPUT PM
1030 IF PM<1 OR PM>9 THEN ? CHR$(125):GOSUB 5000:GOTO 1000
1040 IF PLAYBOARD(PM)<>0 THEN ? "INVALID MOVE":FOR PM=1 TO 1
    000:NEXT PM:GOTO 1000
1050 PLAYBOARD(PM)=-1:MOVE=-MOVE:GOSUB 5000
1060 FOR T=1 TO 9:WORKBOARD(T)=PLAYBOARD(T):NEXT T
1070 GOSUB 7000
1080 IF EVAL<>0 OR FULL<>0 THEN 12000
```

Machines move

```
2000 INDEX=0:FOR T=0 TO 9:MOVE(T)=99:SCORE(T)=99:NEXT T
2001 MOVE=-MOVE
2010 GOSUB 7000:IF FULL THEN 9000
2100 FOR LOOP=1 TO 9
2110 IF PLAYBOARD(LOOP)<>0 THEN 3000
2120 FOR T=1 TO 9:WORKBOARD(T)=PLAYBOARD(T):NEXT T
2130 WORKBOARD(LOOP)=1:GOSUB 6000
2140 MOVE(INDEX)=LOOP:SCORE(INDEX)=EVAL
2150 INDEX=INDEX+1
3000 NEXT LOOP
```

Aggressive move

```
4000 Q=0:MNUM=0:FOR X=0 TO 9
4010 IF SCORE(X)=1 THEN MNUM=MOVE(X):Q=1
4020 NEXT X
4030 IF Q THEN PLAYBOARD(MNUM)=1:GOTO 1000
```

Defensive move

```
4100 Q=0:MNUM=0:FOR X=0 TO 9
4110 IF SCORE(X)=0 THEN MNUM=MOVE(X):Q=1
4120 NEXT X
4130 IF Q<>0 THEN PLAYBOARD(MNUM)=1:GOTO 1000
```

```

4200 Q=0:MNUM=0:FOR X=0 TO 9
4210 IF SCORE(X)=-1 THEN MNUM=MOVE(X):Q=1
4220 NEXT X
4230 IF Q<>0 THEN PLAYBOARD(MNUM)=1:GOTO 1000

```

Error if here

```

4240 STOP

```

Draw Board

```

5000 POSITION 9,4
5010 W=0:FOR X=1 TO 3:GOSUB 5100
5011 W=W+1:IF W<3 THEN ? " | ";
5012 NEXT X
5013 POSITION 9,5: ? " — + — + — "
5020 POSITION 9,6
5030 W=0:FOR X=4 TO 6:GOSUB 5100
5031 W=W+1:IF W<3 THEN ? " | ";
5032 NEXT X
5033 POSITION 9,7: ? " — + — + — "
5040 POSITION 9,8
5050 W=0:FOR X=7 TO 9:GOSUB 5100
5051 W=W+1:IF W<3 THEN ? " | ";
5052 NEXT X
5060 GOTO 5140
5100 Z=PLAYBOARD(X):IF Z=0 THEN ? " _ ";
5110 IF Z=-1 THEN ? "0";
5120 IF Z=1 THEN ? "X";
5130 RETURN
5140 POSITION 20,4: ? "1 | 2 | 3";
5150 POSITION 20,5: ? " — + — + — ";
5160 POSITION 20,6: ? "4 | 5 | 6";
5170 POSITION 20,7: ? " — + — + — ";
5180 POSITION 20,8: ? "7 | 8 | 9";
5190 RETURN

```

Evaluate proposed move

```

6000 A=WORKBOARD(7):B=WORKBOARD(5):C=WORKBOARD(3)
6010 IF A=1 AND B=1 AND C=1 THEN EVAL=1:RETURN
6020 IF A=-1 AND B=-1 AND C=0 THEN EVAL=-1:RETURN
6021 IF A=-1 AND B=0 AND C=-1 THEN EVAL=-1:RETURN
6023 IF A=0 AND B=-1 AND C=-1 THEN EVAL=-1:RETURN
6030 A=WORKBOARD(1):C=WORKBOARD(9)
6040 IF A=1 AND B=1 AND C=1 THEN EVAL=1:RETURN
6050 IF A=-1 AND B=-1 AND C=0 THEN EVAL=-1:RETURN
6051 IF A=-1 AND B=0 AND C=-1 THEN EVAL=-1:RETURN
6052 IF A=0 AND B=-1 AND C=-1 THEN EVAL=-1:RETURN

```

Evaluate horizontal lines

```
6120 Q=0:FOR T=1 TO 7 STEP 3:A=WORKBOARD(T):B=WORKBOARD(T+1)
      :C=WORKBOARD(T+2)
6130 IF A=1 AND B=1 AND C=1 THEN Q=1:T=99:GOTO 6150
6140 IF A=-1 AND B=-1 AND C=0 THEN Q=-1
6141 IF A=-1 AND B=0 AND C=-1 THEN Q=-1
6142 IF A=0 AND B=-1 AND C=-1 THEN Q=-1
6150 NEXT T:IF Q<>0 THEN EVAL=Q:RETURN
```

Evaluate vertical lines

```
6180 FOR T=1 TO 3:A=WORKBOARD(T):B=WORKBOARD(T+3):C=WORKBOARD(T+6)
6190 IF A=1 AND B=1 AND C=1 THEN Q=1:T=99:GOTO 6210
6200 IF A=-1 AND B=-1 AND C=0 THEN Q=-1
6201 IF A=-1 AND B=0 AND C=-1 THEN Q=-1
6202 IF A=0 AND B=-1 AND C=-1 THEN Q=-1
6210 NEXT T
6230 EVAL=Q:RETURN
```

Check if board full

```
7000 FULL=1:FOR T=1 TO 9:WORKBOARD(T)=PLAYBOARD(T):IF PLAYBOARD(T)=0 THEN FULL=0
7010 NEXT T
7020 GOSUB 10000
7030 RETURN
```

Set scoring table

```
8000 FOR T=0 TO 9:? MOVE(T),SCORE(T):NEXT T
```

Evaluate subroutine

```
9000 POSITION 9,1:? "▲GAME▲OVER▲▲":STOP
10000 EVAL=0:A=WORKBOARD(7):B=WORKBOARD(5):C=WORKBOARD(3)
10010 IF A=1 AND B=1 AND C=1 THEN EVAL=1:RETURN
10020 IF A=-1 AND B=-1 AND C=-1 THEN EVAL=-1:RETURN
10030 A=WORKBOARD(1):C=WORKBOARD(9)
10040 IF A=1 AND B=1 AND C=1 THEN EVAL=1:RETURN
10050 IF A=-1 AND B=-1 AND C=-1 THEN EVAL=-1:RETURN
```

Evaluate diagonal lines

```
10120 Q=0:FOR T=1 TO 7 STEP 3:A=WORKBOARD(T):B=WORKBOARD(T+1)
      :C=WORKBOARD(T+2)
10130 IF A=1 AND B=1 AND C=1 THEN Q=1
10140 IF A=-1 AND B=-1 AND C=-1 THEN Q=-1
10150 NEXT T:IF Q<>0 THEN EVAL=Q:RETURN
```

Win,lose or draw

```
10200 FOR T=1 TO 3:A=WORKBOARD(T):B=WORKBOARD(T+3):C=WORKBOAR
      D(T+6)
10210 IF A=1 AND B=1 AND C=1 THEN Q=1:T=99:GOTO 6210
10220 IF A=-1 AND B=-1 AND C=-1 THEN Q=-1
10230 NEXT T
10240 EVAL=Q:RETURN
10250 REM G.STRETTON 85
12000 ? :? :IF EVAL=-1 THEN ? "YOU▲WIN":GOTO 12030
12010 IF EVAL=1 THEN ? "▲I▲WIN":GOTO 12030
12020 IF FULL=1 THEN ? "▲A▲DRAW"
12030 ? :? :? "PRESS▲<RETURN>▲FOR▲ANOTHER▲GAME"
12040 INPUT X$
12050 RUN
```

Initialize

```
20000 DIM WORKBOARD(9),PLAYBOARD(9),R$(10),SCORE(9),MOVE(9),X
      $(9)
20010 MOVE=-1
20020 ? CHR$(125)
20030 DL=PEEK(560)+PEEK(561)*256
20100 FOR INDEX=0 TO 9:PLAYBOARD(INDEX)=0:NEXT INDEX
21000 ? "WILL▲YOU▲MOVE▲FIRST▲(Y/N)":INPUT R$
21010 IF R$="Y" OR R$="y" THEN 1000
21020 IF R$<>"N" AND R$<>"n" THEN ? :? "SORRY":? :GOTO 21000
21030 R=INT(RND(0)*5)*2+1
21040 PLAYBOARD(R)=1
21050 GOTO 1000
```

ChexSum Tables

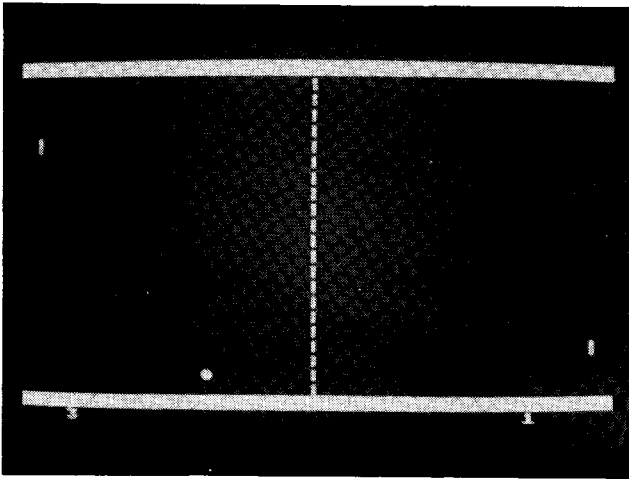
10 = 114
 1000 = 1523
 1010 = 1434
 1020 = 927
 1030 = 1387
 1040 = 2330
 1050 = 1335
 1060 = 1509
 1070 = 225
 1080 = 571
 2000 = 2451
 2001 = 451
 2010 = 663
 2100 = 411
 2110 = 612
 2120 = 1509
 2130 = 821
 2140 = 1314
 2150 = 521
 3000 = 176
 4000 = 982
 4010 = 1608
 4020 = 179
 4030 = 946
 4100 = 982
 4110 = 1543
 4120 = 179
 4130 = 1006
 4200 = 982
 4210 = 1664
 4220 = 179
 4230 = 1006
 4240 = 60
 5000 = 254
 5010 = 962
 5011 = 1117
 5012 = 179
 5013 = 458
 5020 = 256
 5030 = 968
 5031 = 1117

5032 = 179
 5033 = 460
 5040 = 258
 5050 = 974
 5051 = 1117
 5052 = 179
 5060 = 256
 5100 = 1075
 5110 = 552
 5120 = 506
 5130 = 58
 5140 = 808
 5150 = 503
 5160 = 819
 5170 = 505
 5180 = 830
 5190 = 58
 6000 = 1868
 6010 = 1403
 6020 = 1506
 6021 = 1506
 6023 = 1506
 6030 = 1225
 6040 = 1403
 6050 = 1506
 6051 = 1506
 6052 = 1506
 6120 = 3209
 6130 = 2205
 6140 = 1406
 6141 = 1406
 6142 = 1406
 6150 = 920
 6180 = 2722
 6190 = 2142
 6200 = 1406
 6201 = 1406
 6202 = 1406
 6210 = 166
 6230 = 472
 7000 = 2549

7010 = 166
 7020 = 115
 7030 = 58
 8000 = 1409
 9000 = 1201
 10000 = 2192
 10010 = 1403
 10020 = 1627
 10030 = 1225
 10040 = 1403
 10050 = 1627
 10120 = 3209
 10130 = 1306
 10140 = 1526
 10150 = 920
 10200 = 2722
 10210 = 2142
 10220 = 1526
 10230 = 166
 10240 = 472
 12000 = 1365
 12010 = 995
 12020 = 825
 12030 = 2451
 12040 = 178
 12050 = 59
 20000 = 2148
 20010 = 392
 20020 = 343
 20030 = 1222
 20100 = 1109
 21000 = 2029
 21010 = 848
 21020 = 1573
 21030 = 999
 21040 = 597
 21050 = 127

TOTAL = 127479

PINGPONG



CLASSIFICATION: Reflex

This is a two player game, the objective being to keep the ball going as long as possible. Joysticks move the bats up and down. There is a practice mode in which you can play the ball against the wall. Pressing the fire button on the joystick serves the ball.

PROGRAMMING SUGGESTIONS

Ball's rebound could be made dependant on bat's direction at time of hit. Size of bats could be varied to make game harder/easier.

Program Variables

BALL	Screen code for ball
BALLH	Ball's horizontal position
BALLV	Ball's vertical position
BAT1	Player 1's bat position
BAT2	Player 2's bat position
DIRH	Ball's horizontal direction 1 or -1
DIRV	Ball's vertical direction 1 or -1
OBAT1	Bat 1's old position
OBAT2	Bat 2's old position

OLDBALLH	Ball's old horizontal position
OLDBALLV	Ball's old vertical position
QZ	Constant in joystick routine
SCORE1	Player 2's score
SCREEN	Address of start of screen
SERVE	Who serves 1 or 2
T	Local variable
WALL\$	Holds graphics for wall
X\$	Local variable
Z	Local variable

Program Structure

10	Jump to initialization
20 - 30	Put bats onto the screen
100 - 250	Main loop
4000 - 4030	Game end
5000 - 5030	Draw court
20000 - 23000	Intialization routine

Listing

10 POKE 752,1:GOTO 20000

Put bats onto the screen

```
20 POKE SCREEN+40*OBAT1+2,0:POKE SCREEN+40*BAT1+2,124:IF P
   RACT THEN RETURN
30 POKE SCREEN+40*OBAT2+38,0:POKE SCREEN+40*BAT2+38,124:RE
   TURN
```

Main loop

```
100 OBAT1=BAT1:OBAT2=BAT2:Z=STICK(0)/2:IF Z=0Z THEN 140
110 IF BAT1>1 AND Z=INT(Z) THEN BAT1=BAT1-1
120 IF BAT1<21 AND Z<>INT(Z) THEN BAT1=BAT1+1
140 Z=STICK(1)/2:IF Z=0Z THEN 160
142 IF BAT2>1 AND Z=INT(Z) THEN BAT2=BAT2-1
150 IF BAT2<21 AND Z<>INT(Z) THEN BAT2=BAT2+1
160 IF BALLH=37 AND PRACT THEN DIRH=-1:DIRV=INT(RND(0)*3)-1
   :SOUND 0,20,10,9
170 GOSUB 20:OLDBALLH=BALLH:OLDBALLV=BALLV:BALLH=BALLH+DIRH
   :IF BALLH<2 OR BALLH>38 THEN GOTO 900
190 SOUND 0,0,0,0:Z=DIRV+BALLV:IF Z<1 THEN DIRV=1:SOUND 0,1
   21,10,9
200 IF Z>21 THEN DIRV=-1:SOUND 0,100,10,9
210 BALLV=BALLV+DIRV:Z=BALLH+40*BALLV+SCREEN:IF PEEK(Z)=124
   THEN DIRH=-DIRH:DIRV=INT(RND(0)*3)-1:SOUND 0,30,10,9
240 POKE Z,BALL:IF OLDBALLH<>20 THEN POKE OLDBALLH+40*OLDBA
   LLV+SCREEN,0:GOTO 100
250 POKE OLDBALLH+40*OLDBALLV+SCREEN,26:GOTO 100
```

Adjust score and serve

```
900 SERVE=1:IF BALLH<2 THEN SERVE=2
1000 IF SERVE=1 THEN SCORE1=SCORE1+1
1010 IF SERVE=2 THEN SCORE2=SCORE2+1
1020 IF SCORE1=15 OR SCORE2=15 THEN 4000
1030 IF PRACT THEN SERVE=1
2000 GOSUB 5000:BALLV=10:SOUND 0,0,0,0
2010 POSITION 4,23: SCORE1: POSITION 34,23: SCORE2:
2020 IF SERVE=1 THEN BALLH=3:DIRH=1
2030 IF SERVE=2 THEN BALLH=37:DIRH=-1
2035 BAT1=10:BAT2=10:OBAT1=BAT1:OBAT2=BAT2:GOSUB 20
2040 POKE SCREEN+40*BALLV+BALLH,BALL
2050 IF SERVE=1 AND STRIG(0) THEN 2050
2060 IF SERVE=2 AND STRIG(1) THEN 2060
```

```

2070 DIRV=INT(RND(0)*3)-1:IF DIRV=0 THEN 2070
2090 GOTO 100

```

Game end

```

4000 POSITION 4,23:SCORE1::POSITION 34,23:SCORE2;
4005 POSITION 0,23:FOR T=1 TO 22:?:FOR Z=1 TO 50 STEP 4:SOU
ND 0,Z,10,9:NEXT Z:NEXT T
4006 FOR Z=255 TO 0 STEP -1:SOUND 0,Z,10,9:NEXT Z:SOUND 0,0,
0,0
4010 POSITION 10,9:?"Game over":? :? :? "Press <RETURN> for
another game."
4020 INPUT X$
4030 RUN

```

Draw court

```

5000 ? CHR$(125):POSITION 0,0:?:WALL$:?:POSITION 0,22:?:WALL$
;
5010 POSITION 0,10:?"_ "
5020 FOR T=1 TO 21:POSITION 20,T:?" ":?:NEXT T:IF NOT PRACT
THEN RETURN
5030 FOR T=1 TO 21:POSITION 38,T:?"|":?:NEXT T:RETURN

```

Intialization routine

```

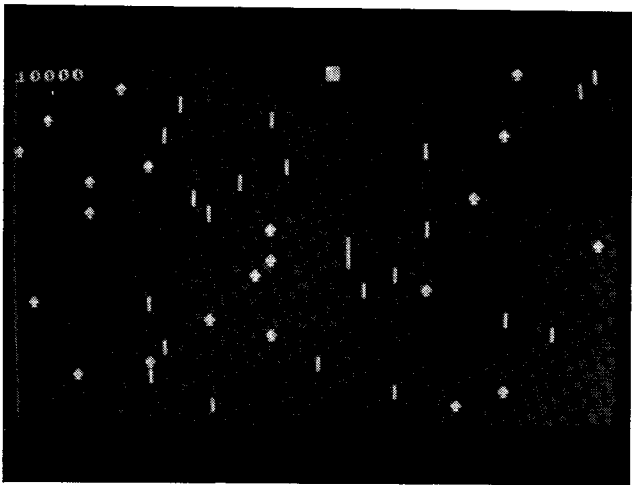
20000 SETCOLOR 4,12,2:SETCOLOR 1,12,14:SETCOLOR 2,12,2:?:CHR$(
(125))
20010 SCREEN=40000
20020 DIM X$(9)
21000 PRACT=0:?:?:?:?"[P]ractice_or_[G]ame":?:INPUT X$
21010 IF X$<>"P" AND X$<>"p" AND X$<>"G" AND X$<>"g" THEN ? :
?:?"SAY WHAT??":?:?:GOTO 21000
21020 IF X$="P" OR X$="p" THEN PRACT=1
22000 DIM WALL$(40):FOR T=2 TO 40:WALL$(T,T)=CHR$(160):NEXT T
:WALL$(1,1)="_"
22040 BAT1=10:BAT2=10
22050 BALL=84
22060 QZ=7.5
23000 SERVE=1:GOTO 2000

```

ChexSum Tables

10 = 461	1020 = 811	5010 = 328
20 = 1910	1030 = 543	5020 = 1569
30 = 1780	2000 = 819	5030 = 1390
100 = 1996	2010 = 1192	20000 = 1672
110 = 1376	2020 = 1053	20010 = 1426
120 = 1402	2030 = 1161	20020 = 386
140 = 1234	2035 = 1791	21000 = 2759
142 = 1385	2040 = 902	21010 = 2916
150 = 1411	2050 = 753	21020 = 1079
160 = 2415	2060 = 835	22000 = 2982
170 = 2516	2070 = 1399	22040 = 734
190 = 2112	2090 = 112	22050 = 481
200 = 1209	4000 = 1192	22060 = 429
210 = 4147	4005 = 2546	23000 = 517
240 = 1681	4006 = 1615	
250 = 1017	4010 = 4414	
900 = 1057	4020 = 178	TOTAL = 72218
1000 = 868	4030 = 59	
1010 = 871	5000 = 1327	

ROCK COLLECTOR



CLASSIFICATION: Evasion

Collect as many rocks as you can in the time allowed. If you hit five spikes you die. Use the I to move left and P to move right.

PROGRAMMING SUGGESTIONS

Add new objects with different score values.
Make the game work for two players at once.

Program Variables

X	Your position	B	Your position in screen RAM.
SCORE	Your current score	COU	Counter
DEATH	Lives left	T,A,S,A\$	Local variables
BRIGHT	Time left		

Program Structure

10 -	50	Initialization	500 -	660	Crash into object
100 -	250	Main loop	1000 -	1520	Game over

Listing

Initialization

```
10  GRAPHICS 0:POKE 752,255
20  X=20
30  DEATH=5
40  BRIGHT=15
50  COU=8
```

Main loop

```
100  POSITION INT(RND(1)*40),23
110  PRINT "★";
120  POSITION INT(RND(1)*40),23
130  PRINT "!"
140  B=40000+X
150  IF PEEK(B)<>0 THEN GOSUB 500
160  POKE B,128
170  COU=COU-1
180  IF COU<0 THEN COU=8:BRIGHT=BRIGHT-1:SETCOLOR 4,0,BRIGHT
:IF NOT BRIGHT THEN GOTO 1000
190  X=X+((PEEK(754)=10) OR (PCLICK(0)=7))-((PEEK(754)=13) OR
(STICK(0)=11)):IF X<5 OR X>38 THEN X=20
200  POSITION 0,0:PRINT SCORE
250  GOTO 100
```

Crash into object

```
500  IF PEEK(B)=124 THEN GOTO 600
510  FOR T=30 TO 0 STEP -5
520  SOUND 0,T,10,10:SOUND 1,255-T,10,10
530  SETCOLOR 1,4,T/2
540  NEXT T
550  SOUND 0,0,0,0:SETCOLOR 1,4,10:SOUND 1,0,0,0
560  SCORE=SCORE+1000
570  POSITION 0,0:PRINT SCORE
580  RETURN
600  FOR T=0 TO 50 STEP 5
610  SOUND 0,T,10,10:SOUND 1,255-T,10,10
620  SETCOLOR 4,0,T/2
630  NEXT T:SOUND 1,0,0,0:SOUND 0,0,0,0
640  SETCOLOR 4,0,BRIGHT
650  DEATH=DEATH+1
660  IF DEATH THEN RETURN
```

Game over

```

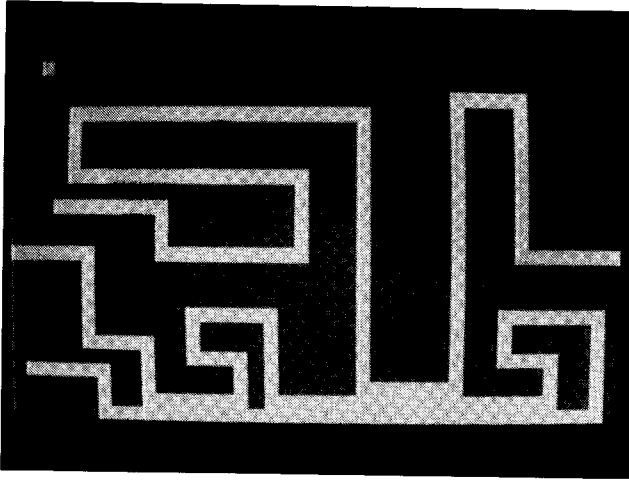
1000 FOR T=0 TO 250
1010 SOUND 0,T,10,7
1020 SOUND 1,T+1,10,7
1030 SOUND 2,T+2,10,7
1040 SOUND 3,T+3,10,7
1050 NEXT T
1060 FOR A=1 TO 20
1070 FOR T=0 TO 15
1080 SETCOLOR 1,8,T
1090 SETCOLOR 2,15-T,8
1100 SETCOLOR 4,T,10
1110 NEXT T
1120 NEXT A
1130 SOUND 0,0,0,0:SOUND 1,0,0,0:SOUND 2,0,0,0:SOUND 3,0,0,0
1140 DIM A$(20)
1150 GRAPHICS 18
1160 A$="GAME _OVER":S=5:GOSUB 1500
1170 A$="YOU _SCORED":S=5:GOSUB 1500
1180 A$=STR$(SCORE):A$(LEN(A$),LEN(A$)+7)=" _POINTS":S=4:GOSUB 1500
1190 POP :RUN
1500 FOR T=0 TO 11:POSITION S,T:PRINT #6;A$:SOUND 0,T,10,8:SOUND 1,200-T,10,10:NEXT T
1510 FOR T=0 TO 11:POSITION 0,T:PRINT #6;" ^^^^^^^^^^^^^^^^^^
^":NEXT T
1520 RETURN

```

ChexSum Tables

10 = 513	530 = 520	1070 = 347
20 = 359	540 = 165	1080 = 405
30 = 333	550 = 946	1090 = 543
40 = 350	560 = 519	1100 = 416
50 = 338	570 = 323	1110 = 165
100 = 811	580 = 58	1120 = 166
110 = 214	600 = 515	1130 = 1235
120 = 811	610 = 1258	1140 = 391
130 = 194	620 = 455	1150 = 167
140 = 502	630 = 706	1160 = 1455
150 = 528	640 = 332	1170 = 1561
160 = 323	650 = 496	1180 = 2869
170 = 500	660 = 231	1190 = 127
180 = 1975	1000 = 409	1500 = 2634
190 = 3863	1010 = 453	1510 = 1739
200 = 323	1020 = 634	1520 = 58
250 = 112	1030 = 636	
500 = 633	1040 = 638	
510 = 537	1050 = 165	
520 = 1258	1060 = 424	
		TOTAL = 38638

SNAKES



CLASSIFICATION: Strategy

This is a two player game where each player must use all his skill and intelligence to make his opponent crash into himself, the side of the screen, or the other snake. Player One uses the keyboard and Player Two uses the joystick.

PROGRAMMING SUGGESTIONS

If you wanted, you could add a third player (he would have to use joystick port 2), or you could add some kind of scoring system.

Program Variables

X1,Y1	Player One's Co-ordinates
X2,Y2	Player Two's Co-ordinates
DX1,DY1	Player One's Direction
DX2,DY2	Player Two's Direction
PI1\$,PI2\$	Names of players one & two

Program Structure

Line	
10 - 30	Initialisation
100 - 280	Main loop
1000 - 1050	Player One's death
2000 - 2050	Player Two's death
7000 - 8000	Ask Player's names

Listing

Initialisation

```
10  GOSUB 7000:GRAPHICS 0:POKE 752,255
20  X1=0:Y1=12:X2=39:Y2=12
30  DX1=1:DY1=0:DX2=-1:DY2=0
```

Main loop

```
100  POKE 40000+X1+Y1*40,128
110  POKE 40000+X2+Y2*40,128
120  IF (PEEK(754)=13) THEN DX1=-1:DY1=0
130  IF (STICK(0)=11) THEN DX2=-1:DY2=0
140  IF (PEEK(754)=10) THEN DX1=1:DY1=0
150  IF (STICK(0)=7) THEN DX2=1:DY2=0
160  IF (PEEK(754)=47) THEN DX1=0:DY1=-1
170  IF (STICK(0)=14) THEN DX2=0:DY2=-1
180  IF (PEEK(754)=23) THEN DX1=0:DY1=1
190  IF (STICK(0)=13) THEN DX2=0:DY2=1
200  X1=X1+DX1:IF (X1<0 OR X1>39) OR (Y1<0 OR Y1>23) THEN GO
    TO 1000
210  X2=X2+DX2
220  Y1=Y1+DY1
230  Y2=Y2+DY2
240  IF PEEK(40000+X1+Y1*40)=128 THEN GOTO 1000
250  IF PEEK(40000+X2+Y2*40)=128 THEN GOTO 2000
260  IF (X1<0 OR X1>39) OR (Y1<0 OR Y1>23) THEN GOTO 1000
270  IF (X2<0 OR X2>39) OR (Y2<0 OR Y2>23) THEN GOTO 2000
280  GOTO 100
```

Player One's death

```
1000 GRAPHICS 18
1010 ? #6:? #6:? #6:? #6:"_ _ _":PL1#;"_ IS DEAD."
1020 ? #6:? #6:"_ _ _":PL2#;"_ HAS WON"
1030 POKE 754,0
1040 FOR T=0 TO 100:SOUND 1,T,0,10:IF PEEK(754)=0 THEN NEXT
    T:GOTO 1040
1050 RUN
```

Player Two's death

```

2000 GRAPHICS 18
2010 ? #6: ? #6: ? #6: ? #6: "▲▲"; PL2$; "▲ IS ▲ DEAD."
2020 ? #6: ? #6: "▲▲"; PL1$; "▲ HAS ▲ WON"
2030 POKE 754,0
2040 FOR T=0 TO 100: SOUND 1,T,0,10: IF PEEK(754)=0 THEN NEXT
      T: GOTO 2040
2050 RUN

```

Ask Player's names

```

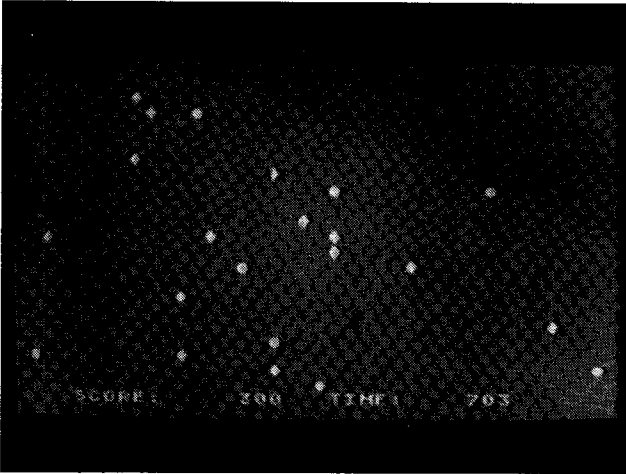
7000 DIM PL1$(8),A$(40),PL2$(8)
7010 GRAPHICS 2: POSITION 0,5: ? #6: "PLAYER ▲1 ▲NAME ▲?": ? #6: "(M
      AX. ▲8 ▲CHARACTERS)"
7030 INPUT A$
7040 IF LEN(A$)>8 THEN GRAPHICS 18: POSITION 0,6: ? #6: "SHORTE
      N ▲IT, YOU ▲FOOL!": FOR T=0 TO 1000: NEXT T: GOTO 7010
7050 PL1$=A$
7060 GRAPHICS 2: POSITION 0,5: ? #6: "PLAYER ▲2 ▲NAME ▲?": ? #6: "(M
      AX. ▲8 ▲CHARACTERS)"
7070 INPUT A$
7080 IF LEN(A$)>8 THEN GRAPHICS 18: POSITION 0,6: ? #6: "SHORTE
      N ▲IT, YOU ▲FOOL!": FOR T=0 TO 1000: NEXT T: GOTO 7050
7090 PL2$=A$
8000 RETURN

```

ChexSum Tables

10 = 769	230 = 555	2040 = 1862
20 = 1454	240 = 1126	2050 = 59
30 = 1371	250 = 1146	7000 = 1113
100 = 784	260 = 1437	7010 = 3130
110 = 788	270 = 1461	7030 = 163
120 = 1336	280 = 112	7040 = 3659
130 = 1194	1000 = 167	7050 = 397
140 = 1277	1010 = 1657	7060 = 3131
150 = 1128	1020 = 1221	7070 = 163
160 = 1387	1030 = 255	7080 = 3723
170 = 1196	1040 = 1846	7090 = 398
180 = 1296	1050 = 59	8000 = 58
190 = 1140	2000 = 167	
200 = 2046	2010 = 1658	
210 = 552	2020 = 1220	TOTAL = 50465
220 = 549	2030 = 255	

DIAMOND HUNT



CLASSIFICATION: Reflex

In the time allowed, you must collect all the diamonds you can. If you crash into a rock, five more diamonds will be scattered across the screen, but time will be taken away.

PROGRAMMING SUGGESTIONS

Increase the speed of your man as you collect more and more diamonds.

Program Variables

X	The X coordinate
Y	The Y coordinate
SCORE	Your score
TIME	The time you have left
U	Character you have crashed into
S,S1	Music data
S2	Flag to indicate end of music
FLAG1,FLAG2	Flags for sound effects
NOISE,NOISE1	Sound effect pitches
T	Dummy variable

Program Structure

10 -	50	Initialize the game
100 -	250	Main loop
500 -	600	Hit the diamond
1000 -	1040	Hit a rock
2000 -	2050	The time is up
5000 -	5070	Music data
6000 -	6060	Draw the title screen

Listing

5 GOSUB 6000

Initialize the game

```
10 POKE 752,255:GRAPHICS 0
20 X=0:Y=1
30 FOR T=0 TO 9:POKE 40000+INT(RND(1)*880),84:POKE 40000+I
   NT(RND(1)*880),96:NEXT T
40 SCORE=0:TIME=999
50 POSITION 0,22:PRINT " ^^^^SCORE: ^^^^^^^^^^^^TIME:"
```

Main loop

```
100 POKE 40000+X+Y*40,0
110 Y=Y+((PEEK(754)=23) OR (STICK(0)=13))-((PEEK(754)=47) O
   R (STICK(0)=14))
120 IF Y<0 THEN Y=21
130 IF Y>21 THEN Y=0
140 X=X+1:IF X>39 THEN X=0
150 U=PEEK(40000+X+Y*40)
160 POKE 40000+X+Y*40,127
170 IF U=96 THEN GOSUB 500
180 IF U=84 THEN GOSUB 1000
190 TIME=TIME-1:POSITION 30,22:? TIME:" ^":IF TIME<1 THEN G
   OTO 2000
200 READ S,S1,S2:SOUND 0,S,10,10:SOUND 1,S1,10,10:IF S2 THE
   N RESTORE
210 IF FLAG1 THEN NOISE=NOISE-1:SOUND 2,NOISE,8,13:SETCOLOR
   1,8,INT(RND(1)*15):IF NOISE<1 THEN FLAG1=0:SOUND 2,0,0
   ,0:SETCOLOR 1,13,10
220 IF FLAG2 THEN NOISE1=NOISE1-10:SOUND 3,NOISE1,10,10:IF
   NOISE1<1 THEN NOISE1=30:FLAG2=FLAG2-1:IF FLAG2=0 THEN S
   OUND 3,0,0,0
230 IF FLAG2 THEN SETCOLOR 2,INT(RND(1)*15),3
240 IF NOT FLAG2 THEN SETCOLOR 2,11,5
250 GOTO 100
```

Hit the diamond

```
500 SCORE=SCORE+50
510 POSITION 15,22:? SCORE;
520 NOISE1=30:FLAG2=4
600 RETURN
```

```

1000 FOR T=0 TO 4
1010 POKE 40000+INT(RND(1)*880),96
1020 NEXT T
1030 TIME=TIME-20
1035 NOISE=10:FLAG1=1
1040 RETURN

```

The time is up

```

2000 GRAPHICS 18:SOUND 0,0,0,0:SOUND 1,0,0,0:SOUND 2,0,0,0:S
OUND 3,0,0,0
2010 ? #6:? #6:? #6:? #6;" ^^^^^^TIME UP!"
2020 ? #6:? #6:"YOUR SCORE WAS ",SCORE
2030 POKE 754,0
2040 SOUND 0,INT(RND(1)*30),7,10:SOUND 1,INT(RND(1)*255),4,1
0:IF PEEK(754)=0 THEN GOTO 2040
2050 RUN

```

Music data

```

5000 DATA 162,81,0,162,81,0,162,81,0,162,81,0,108,81,0,108,8
1,0,96,81,0,96,81,0,96,81,0,96,81,0,108,81,0,108,81,0
5010 DATA 162,81,0,162,81,0,162,81,0,162,81,0,108,81,0,108,8
1,0,96,72,0,96,72,0,96,72,0,96,72,0,108,72,0,108,64,0
5020 DATA 162,64,0,162,64,0,162,53,0,162,53,0,108,53,0,108,5
3,0,96,53,0,96,53,0,96,53,0,96,53,0,108,53,0,108,53,0
5030 DATA 162,53,0,162,53,0,162,53,0,162,53,0,108,53,0,108,5
3,0,96,64,0,96,64,0,96,72,0,96,72,0,108,81,0,108,81,0
5040 DATA 162,64,0,162,64,0,162,64,0,162,64,0,108,64,0,108,6
4,0,96,64,0,96,64,0,96,64,0,96,64,0,108,64,0,108,64,0
5050 DATA 162,64,0,162,64,0,162,64,0,162,64,0,108,64,0,108,6
4,0,96,72,0,96,72,0,96,72,0,96,72,0,108,72,0,108,72,0
5060 DATA 162,81,0,162,81,0,162,81,0,162,81,0,108,81,0,108,8
1,0,96,81,0,96,81,0,96,81,0,96,81,0,108,81,0,108,81,0
5070 DATA 162,81,0,162,81,0,162,81,0,162,81,0,108,81,0,108,8
1,0,96,81,0,96,81,0,96,0,0,96,0,0,108,0,0,108,0,1

```

Draw the title screen

```

6000 GRAPHICS 18
6005 POKE 754,0
6010 FOR T=0 TO 11:POSITION T,5:? #6;" ^DIAMOND ^":NEXT T
6015 FOR T=0 TO 30 STEP 10:SOUND 1,T,0,15:NEXT T:SOUND 1,0,0
,0
6020 FOR T=10 TO 1 STEP -1:POSITION T,5:? #6;" ^DIAMOND ^":NEX
T T
6030 FOR T=0 TO 15:POSITION T,7:? #6;" ^HUNT":NEXT T
6035 FOR T=0 TO 30 STEP 10:SOUND 1,T,0,15:NEXT T:SOUND 1,0,0
,0

```

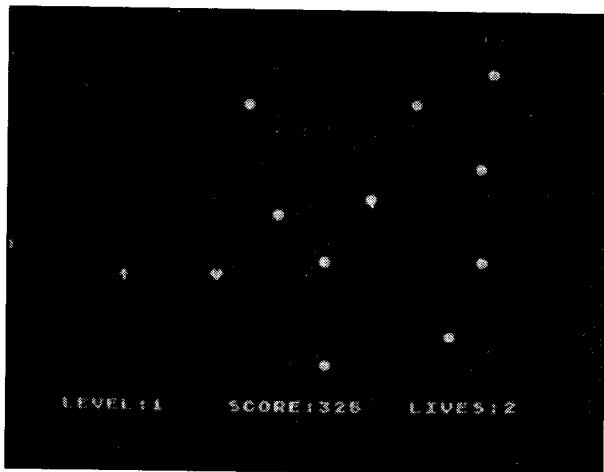
```
6040 FOR T=14 TO 1 STEP -1:POSITION T,7:?" #6;"_HUNT_":NEXT T
```

```
6050 IF PEEK(754)<>0 THEN RETURN
6060 GOTO 6010
```

ChexSum Tables

5 = 209	240 = 611	5020 = 5192
10 = 513	250 = 112	5030 = 5196
20 = 617	500 = 578	5040 = 5212
30 = 2953	510 = 534	5050 = 5206
40 = 785	520 = 754	5060 = 5200
50 = 1635	600 = 58	5070 = 4973
100 = 678	1000 = 326	6000 = 167
110 = 2731	1010 = 1106	6005 = 255
120 = 597	1020 = 161	6010 = 1738
130 = 598	1030 = 533	6015 = 1559
140 = 1154	1035 = 715	6020 = 1988
150 = 1019	1040 = 58	6030 = 1511
160 = 783	2000 = 1477	6035 = 1559
170 = 572	2010 = 1590	6040 = 1796
180 = 565	2020 = 1640	6050 = 505
190 = 1724	2030 = 255	6060 = 223
200 = 1959	2040 = 2910	
210 = 3915	2050 = 59	
220 = 3414	5000 = 5200	
230 = 1057	5010 = 5201	
		TOTAL = 93636

SPACMAN



CLASSIFICATION: Invader/Evasion

Collect all of the objects on the screen and avoid the love heart. Use the I,P,Q and Z keys to move left,right,up and down.

PROGRAMMING SUGGESTIONS

Increase the speed of the game by resorting to machine code.

Program Variables

SCORE	Your score.
LEVEL	The level you are at in the game.
LIVES	The number of lives left
X,Y	Your player's coordinates on the screen
A,B	The love hearts X and Y coordinates
OBJ	Number of objects collected
T	Dummy variables
VA	Character under love heart
UY	Character under you

Program Structure

Lines

5 -	80	Initailization
100 -	250	Main loop
500 -	580	Get object
1000 -	1060	Death
5000 -	5060	Title screen

Listing

Initailization

```
5   GOSUB 5000
10  SCORE=0:LEVEL=1:LIVES=3
```

Initialize display

```
20  GRAPHICS 0:POKE 752,255
30  X=39:Y=21
40  A=1:B=1:OBJ=-1
50  POSITION 0,22:PRINT " _ _ _ _ LEVEL: ";LEVEL;" _ _ _ _ SCORE: ";
    SCORE;" _ _ _ _ LIVES: ";LIVES
60  FOR T=0 TO (LEVEL*2+10):POKE 40000+INT(RND(1)*819),84:N
    EXT T
70  UA=PEEK(40000+A+B*40):UY=PEEK(40000+X+Y*40)
80  IF UY=84 THEN GOSUB 500
```

Main loop

```
100 POKE 40000+A+B*40,UA
110 A=A+(X>A)-(X<A):B=B+(Y>B)-(Y<B)
120 UA=PEEK(40000+A+B*40):IF UA=92 THEN GOTO 1000
130 POKE 40000+A+B*40,64
140 POKE 40000+X+Y*40,UY
150 X=X+((PEEK(754)=10) OR (STICK(0)=7))-((PEEK(754)=13) OR
    (STICK(0)=11))
160 IF X>39 THEN X=0
170 IF X<0 THEN X=39
180 Y=Y+((PEEK(754)=23) OR (STICK(0)=13))-((PEEK(754)=47) O
    R (STICK(0)=14))
190 IF Y>21 THEN Y=0
200 IF Y<0 THEN Y=21
210 UY=PEEK(40000+X+Y*40)
220 POKE 40000+X+Y*40,92
230 IF ((A=X) AND (B=Y)) AND (UA<>84) THEN GOTO 1000
240 IF UY=84 THEN GOSUB 500
250 GOTO 100
```

```

500  UY=0:OBJ=OBJ+1:SCORE=SCORE+25:POSITION 21,22: ? SCORE;
505  FOR T=0 TO 30 STEP 2:SOUND 1,T,0,9:NEXT T:SOUND 1,0,0,0

510  IF OBJ<>(LEVEL*2+10) THEN RETURN
520  GRAPHICS 18
530  ? #6: ? #6: ? #6: ? #6: ? #6: " ^^^^^^WELL ^DONE!"
540  FOR T=0 TO 300:NEXT T
550  GRAPHICS 18
560  LEVEL=LEVEL+1
570  ? #6: ? #6: ? #6: ? #6: ? #6: " ^^^^^^LEVEL ^";LEVEL
580  FOR T=0 TO 255:SOUND 1,T,10,10:NEXT T:POP :SOUND 1,0,0,
0:GOTO 20

```

Death

```

1000  LIVES=LIVES-1
1005  FOR N=0 TO 5:FOR T=255 TO 200 STEP -5:SOUND 1,T,10,10:S
OUND 0,T-200,0,9:NEXT T:NEXT N:SOUND 1,0,0,0:SOUND 0,0,
0,0
1010  IF LIVES THEN GOTO 20
1020  GRAPHICS 18
1030  ? #6: ? #6: ? #6: ? #6: " ^^^^^YOU ^ARE ^DEAD."
1031  FOR T=0 TO 10:SOUND 1,0,0,0:READ A,B:SOUND 1,A,10,10:FO
R N=1 TO B:NEXT N:NEXT T:SOUND 1,0,0,0
1032  DATA 108,80,108,80,108,40,108,80,91,80,96,40,96,80,108,
40,108,80,114,40,108,160
1040  POKE 754,0
1050  IF PEEK(754)=0 THEN GOTO 1050
1060  RUN

```

Title screen

```

5000  GRAPHICS 0:SETCOLOR 2,12,4
5010  POSITION 0,5
5015  POKE 754,0
5020  ? " ^^^^^^":

```

Graphics for title

```

5030  ? "
+-----+-----+-----+-----+-----+-----+-----+-----+
+ P H A N T A S M A S   +-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+-----+-----+
+-----+-----+-----+-----+-----+-----+-----+-----+
"

```

```

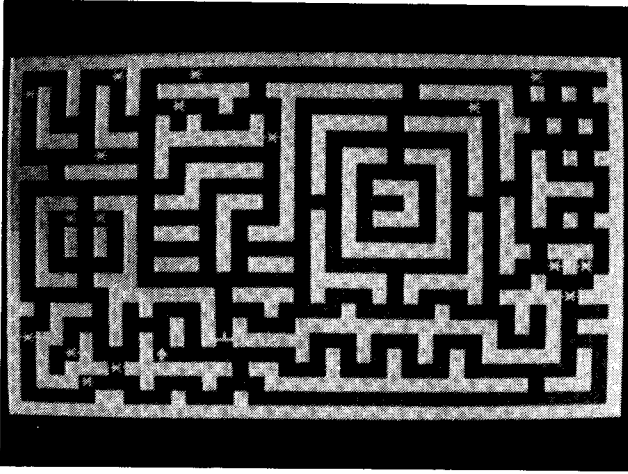
5040 ? :? :SETCOLOR 1,0,INT(RND(1)*15)
5045 SOUND 0,INT(RND(1)*255),0,10
5046 FOR T=0 TO 255 STEP 16
5047 SOUND 1,T,10,10
5048 NEXT T
5050 IF PEEK(754)>0 THEN SOUND 0,0,0,0:SOUND 1,0,0,0:RETURN
5060 GOTO 5020

```

ChexSum Tables

5 = 193	210 = 1030	1031 = 3165
10 = 986	220 = 894	1032 = 3804
20 = 513	230 = 1609	1040 = 255
30 = 776	240 = 559	1050 = 665
40 = 1119	250 = 112	1060 = 59
50 = 2565	500 = 2019	5000 = 480
60 = 2015	505 = 1551	5010 = 182
70 = 2118	510 = 750	5015 = 255
80 = 559	520 = 167	5020 = 230
100 = 811	530 = 1958	5030 = 4248
110 = 2501	540 = 524	5040 = 947
120 = 1681	550 = 167	5045 = 885
130 = 852	560 = 495	5046 = 542
140 = 808	570 = 1843	5047 = 529
150 = 2649	580 = 1910	5048 = 167
160 = 626	1000 = 498	5050 = 1151
170 = 625	1005 = 3601	5060 = 223
180 = 2737	1010 = 323	
190 = 604	1020 = 167	
200 = 603	1030 = 1848	
		TOTAL = 65153

MAZING



CLASSIFICATION: Evasion

Move your man around the screen with joystick 1. You must eat all of the asterisks. When you have eaten all of the asterisks you will move onto the next level. A nasty little beastie will try to eat you while you are moving round the board. Beware!!!!

PROGRAMMING SUGGESTIONS

Increase the number of nasties moving round the screen and add music to the background to make the game more interesting.

Program Variables

BDIR	Beast direction
BPOS	Beast position
BX	Beast X position
BY	Beast Y position
FLAGS	Sound flag
HITFLAG	Indicates a hit
LEVEL	Current level
M\$	Holds the maze
MAN	CHR\$ code for man
NUMMEN	Number of men
OLDB	Beasts old position
OLDCHR	Character under beast
OLDPLACE	Mans old screen position
PLACE	Mans position on screen
POSH	Mans X position
POSV	Mans Y position
RAND	Where to PEEK for a random number
SCREEN	Start of video RAM

Program Structure

10	Cursor off and set margins
20	Jump to initialization
100 - 212	Move man
1000 - 1500	Move beastie
2000 - 2030	Put man on board
3000	Hit something
3010 - 3080	Update condition
3100 - 3230	Hit the beastie
3500 - 3580	All the men are gone
4000 - 4040	End of the game
9000 - 9330	Put maze level into M\$
9500 - 9520	Convert maze to screen format
9530 - 9590	Put the asterisks into maze
9600 - 9690	Draw the maze
10001 - 10024	Data for maze one
10051 - 10074	Data for maze two
10100 - 10124	Data for maze three
10151 - 10174	Data for maze four
20000 - 20110	Initialize the subroutines

Listing

```

1      REM ..... NOTE :LAST LINE IN EACH DATA BLOCK IS 1
      CHARACTER SHORTER THAN THE REST .....
      .....
10     POKE 752,1:POKE 82,0:POKE 83,39
20     GOTO 20000
100    TIME=TIME+1:PLACE=SCREEN+POSH+POSV*40:OLDPLACE=PLACE:PO
      KE 77,0
110    Z=STICK(0):IF FLAGS THEN SOUND 0,FLAGS,10,12:FLAGS=FLAG
      S-5:IF FLAGS<20 THEN FLAGS=0
120    IF FLAGS=0 THEN SOUND 0,255,10,12
130    ON Z GOTO 1000,1000,1000,1000,190,180,140,1000,200,210,
      150,1000,160,170,1000
140    IF PEEK(PLACE+1)<>128 THEN POSH=POSH+1
141    GOTO 1000
150    IF PEEK(PLACE-1)<>128 THEN POSH=POSH-1
151    GOTO 1000
160    IF PEEK(PLACE+40)<>128 THEN POSV=POSV+1
161    GOTO 1000
170    IF PEEK(PLACE-40)<>128 THEN POSV=POSV-1
171    GOTO 1000
180    IF PEEK(PLACE-39)<>128 THEN POSV=POSV-1:POSH=POSH+1:GOT
      O 1000
181    IF PEEK(PLACE-40)<>128 THEN POSV=POSV-1:GOTO 1000
182    IF PEEK(PLACE+1)<>128 THEN POSH=POSH+1
183    GOTO 1000
190    IF PEEK(PLACE+41)<>128 THEN POSV=POSV+1:POSH=POSH+1:GOT
      O 1000
191    IF PEEK(PLACE+40)<>128 THEN POSV=POSV+1:GOTO 1000
192    IF PEEK(PLACE+1)<>128 THEN POSH=POSH+1
193    GOTO 1000
200    IF PEEK(PLACE+39)<>128 THEN POSV=POSV+1:POSH=POSH-1:GOT
      O 1000
201    IF PEEK(PLACE-1)<>128 THEN POSH=POSH-1:GOTO 1000
202    IF PEEK(PLACE+40)<>128 THEN POSV=POSV+1:GOTO 1000
203    GOTO 1000
210    IF PEEK(PLACE-41)<>128 THEN POSH=POSH-1:POSV=POSV-1:GOT
      O 1000
211    IF PEEK(PLACE-1)<>128 THEN POSH=POSH-1:GOTO 1000
212    IF PEEK(PLACE-40)<>128 THEN POSV=POSV-1:GOTO 1000

```

Move beastie

```

1000   T=BPOS-SCREEN
1210   BY=INT(T/40):BX=T-40*BY
1220   OLDB=BPOS
1230   IF ABS(BDIR)=1 THEN GOTO 1270
1240   T=SGN(POSH-BX):IF T AND PEEK(BPOS+T)<>128 AND PEEK(RAND
      )>220 THEN 1380
1250   IF T AND PEEK(BPOS+T)<>128 THEN BDIR=T:GOTO 1450

```

```

1260 GOTO 1290
1270 T=40*SGN(POSV-BY):IF T AND PEEK(BPOS+T)<>128 AND PEEK(R
AND)>220 THEN 1380
1280 IF T AND PEEK(BPOS+T)<>128 THEN BDIR=T:GOTO 1450
1290 IF PEEK(BPOS+BDIR)<>128 THEN GOTO 1450
1300 T=PEEK(RAND)>127
1310 IF T THEN GOTO 1340
1320 T=SGN(POSH-BX)
1330 IF T AND PEEK(BPOS+T)<>128 THEN BDIR=T:GOTO 1450
1340 T=40*SGN(POSV-BY)
1350 IF T AND PEEK(BPOS+T)<>128 THEN BDIR=T:GOTO 1450
1360 T=SGN(HPOS-BX)
1370 IF T AND PEEK(BPOS+T)<>128 THEN BDIR=T:GOTO 1450
1380 T=INT(RND(0)*4)
1390 ON T GOTO 1410,1420,1430
1400 IF PEEK(BPOS-40)<>128 THEN BDIR=-40:GOTO 1450
1410 IF PEEK(BPOS+40)<>128 THEN BDIR=40:GOTO 1450
1420 IF PEEK(BPOS-1)<>128 THEN BDIR=-1:GOTO 1450
1430 IF PEEK(BPOS+1)<>128 THEN BDIR=1:GOTO 1450
1440 GOTO 1400
1450 BPOS=BPOS+BDIR
1460 POKE OLDB,OLDCHR
1470 OLDCHR=PEEK(BPOS)
1480 POKE BPOS,THEM
1490 HITFLAG=(OLDCHR=MAN)
1500 IF HITFLAG THEN 3100

```

Put man on board

```

2000 POKE OLDPLACE,0:PLACE=SCREEN+POSH+POSV*40
2010 T=PEEK(PLACE):IF T THEN 3000
2020 POKE PLACE,MAN
2030 GOTO 100
3000 IF T<>10 THEN 3100
3010 TOTAL=TOTAL-1:T=PLACE-SCREEN+1:M$(T,T)="▲"
3020 FLAGS=60:IF TOTAL THEN 100
3030 FOR T=1 TO 30:?:NEXT T
3040 IF LEVEL=3 THEN 4000
3050 GRAPHICS 2+16
3060 LEVEL=LEVEL+1:POSITION 3,5:?:#6;"LEVEL▲":LEVEL+1:POSITI
ON 3,8:?:#6;NUMMEN;"▲REMAINING"
3070 FOR T=100 TO 0 STEP -1:SOUND 0,T,12,15:NEXT T:SOUND 0,2
55,10,12
3080 GOTO 20070

```


Hit the beastie

```
3100 X=POSH+POSV*40+SCREEN
3110 FOR T=255 TO 0 STEP -1
3120 POKE X,T:SOUND 0,T,10,12
3130 NEXT T
3140 NUMMEN=NUMMEN-1
3150 IF NOT NUMMEN THEN 3500
3160 GRAPHICS 2+16:? #6;NUMMEN;"▲▲REMAINING"
3170 POSH=25:POSV=9
3180 T1=0:T2=0:FOR T=0 TO 255:SOUND 0,T,10,12:SOUND 1,T1,10,
12:SOUND 2,T2,10,12
3190 T1=T1+2:IF T1>255 THEN T1=0
3200 T2=T2+3:IF T2>255 THEN T2=0
3210 OLDS=T:NEXT T
3220 GOSUB 9600
3230 GOTO 100
```

All the men are gone

```
3500 GRAPHICS 2+16:POSITION 2,5:? #6;"ALL▲MEN▲DEAD!!":FOR T=
1 TO 255 STEP 4
3510 SOUND 1,0,0,0:SOUND 2,0,0,0:FOR T1=1 TO 253 STEP T
3520 SOUND 0,T1,10,12
3530 NEXT T1
3540 NEXT T
3550 SOUND 0,0,0,0
3580 GOTO 4020
```

End of the game

```
4000 ? "ALL▲LEVELS▲COMPLETED!"
4010 ? :? "SCORE▲:";TIME
4020 ? :? :? "PRESS▲<RETURN>▲FOR▲ANOTHER▲GAME"
4030 INPUT X$
4040 RUN
```

Put maze level into M\$

```
9000 RESTORE 10000+LEVEL*50+1
9010 POSH=25:POSV=9
9100 FOR T=0 TO 23
9200 READ T$
```

```

9300 M$(T*40+1,T*40+40)=T$
9310 NEXT T
9320 GOSUB 9500:GOSUB 9600
9330 RETURN

```

Convert maze to screen format

```

9500 FOR T=1 TO LEN(M$)
9510 IF M$(T,T)="*" THEN M$(T,T)=CHR$(160)
9520 NEXT T

```

Put the asterisks into maze

```

9530 TOTAL=30
9540 FOR T=1 TO TOTAL
9560 Z=INT(RND(0)*959+1):IF M$(Z,Z)<>"_" THEN 9560
9570 M$(Z,Z)="*"
9580 NEXT T
9590 RETURN

```

Draw the maze

```

9600 FOR T=1 TO 20:?:NEXT T
9610 ? M$:
9620 POKE SCREEN+959,128
9640 BPOS=SCREEN+882:OLDCHR=PEEK(BPOS)
9670 BDIR=1
9690 RETURN

```

Data for maze one

```

10001 DATA *****
10002 DATA * * * * *
10003 DATA * * * * *
10004 DATA * * * * *
10005 DATA * * * * *
10006 DATA * * * * *
10007 DATA * * * * *
10008 DATA * * * * *
10009 DATA * * * * *
10010 DATA * * * * *
10011 DATA * * * * *
10012 DATA * * * * *
10013 DATA * * * * *
10014 DATA * * * * *

```

```

10015 DATA * *** ***          ***** * **
10016 DATA *          ***** * * * * *
10017 DATA ** *** * * * * * * * * *
10018 DATA * * * * * * * * * * * * *
10019 DATA * * * * * * * * * * * *
10020 DATA * * * * * * * * * * * *
10021 DATA * * *** * * * * * * * *
10022 DATA * *** * * * * * * * * *
10023 DATA *      * * *
10024 DATA *****

```

Data for maze two

```

10051 DATA *****
10052 DATA *          * * *
10053 DATA * * * * * * * * * * *
10054 DATA * * * * * * * * * *
10055 DATA * * * * * * * * * *
10056 DATA * * * * * * * * *
10057 DATA * * * * * * * * *
10058 DATA * * * * * * * *
10059 DATA * * * * * * * *
10060 DATA * * * * * * * *
10061 DATA * * * * * * * *
10062 DATA * * * * * * * *
10063 DATA * * * * * * * *
10064 DATA * * * * * * * *
10065 DATA * * * * * * * *
10066 DATA * * * * * * * *
10067 DATA *      * * *
10068 DATA * * * * * * * *
10069 DATA *          * * *
10070 DATA * * * * * * * *
10071 DATA *          * * *
10072 DATA * * * * * * * *
10073 DATA *          * * *
10074 DATA *****

```

Data for maze three

```

10101 DATA *****
10102 DATA *          * * *
10103 DATA * * * * * * * *
10104 DATA * * * * * * * *
10105 DATA *          * * *
10106 DATA * * * * * * * *
10107 DATA *          * * *
10108 DATA * * * * * * * *
10109 DATA *          * * *
10110 DATA * * * * * * * *
10111 DATA *          * * *
10112 DATA * * * * * * * *

```


ChexSum Tables

10 = 1118	1460 = 369	9530 = 378
20 = 114	1470 = 588	9540 = 445
100 = 2246	1480 = 367	9560 = 2092
110 = 2530	1490 = 700	9570 = 778
120 = 770	1500 = 337	9580 = 166
130 = 2416	2000 = 1184	9590 = 58
140 = 1164	2010 = 905	9600 = 704
141 = 127	2020 = 362	9610 = 238
150 = 1166	2030 = 112	9620 = 543
151 = 127	3000 = 443	9640 = 1269
160 = 1229	3010 = 2014	9670 = 348
161 = 127	3020 = 730	9690 = 58
170 = 1231	3030 = 720	10001 = 1836
171 = 127	3040 = 470	10002 = 1476
180 = 1980	3050 = 282	10003 = 1736
181 = 1406	3060 = 3347	10004 = 1526
182 = 1164	3070 = 1836	10005 = 1656
183 = 127	3080 = 226	10006 = 1626
190 = 1986	3100 = 948	10007 = 1596
191 = 1404	3110 = 574	10008 = 1656
192 = 1164	3120 = 864	10009 = 1586
193 = 127	3130 = 166	10010 = 1636
200 = 1979	3140 = 552	10011 = 1606
201 = 1341	3150 = 385	10012 = 1616
202 = 1404	3160 = 1457	10013 = 1646
203 = 127	3170 = 748	10014 = 1586
210 = 1989	3180 = 2952	10015 = 1636
211 = 1341	3190 = 1310	10016 = 1666
212 = 1406	3200 = 1315	10017 = 1576
1000 = 576	3210 = 594	10018 = 1676
1210 = 1561	3220 = 263	10019 = 1616
1220 = 412	3230 = 112	10020 = 1606
1230 = 745	3500 = 2378	10021 = 1626
1240 = 2417	3510 = 1318	10022 = 1706
1250 = 1528	3520 = 489	10023 = 1496
1260 = 273	3530 = 190	10024 = 1794
1270 = 2603	3540 = 166	10051 = 1836
1280 = 1528	3550 = 182	10052 = 1496
1290 = 926	3580 = 207	10053 = 1686
1300 = 729	4000 = 1540	10054 = 1586
1310 = 380	4010 = 791	10055 = 1696
1320 = 759	4020 = 2451	10056 = 1566
1330 = 1528	4030 = 186	10057 = 1696
1340 = 937	4040 = 59	10058 = 1536
1350 = 1528	9000 = 641	10059 = 1686
1360 = 770	9010 = 748	10060 = 1576
1370 = 1528	9100 = 362	10061 = 1676
1380 = 744	9200 = 219	10062 = 1596
1390 = 639	9300 = 1520	10063 = 1646
1400 = 1442	9310 = 166	10064 = 1626
1410 = 1385	9320 = 546	10065 = 1616
1420 = 1316	9330 = 58	10066 = 1666
1430 = 1259	9500 = 637	10067 = 1516
1440 = 131	9510 = 1810	10068 = 1766
1450 = 594	9520 = 166	10069 = 1536

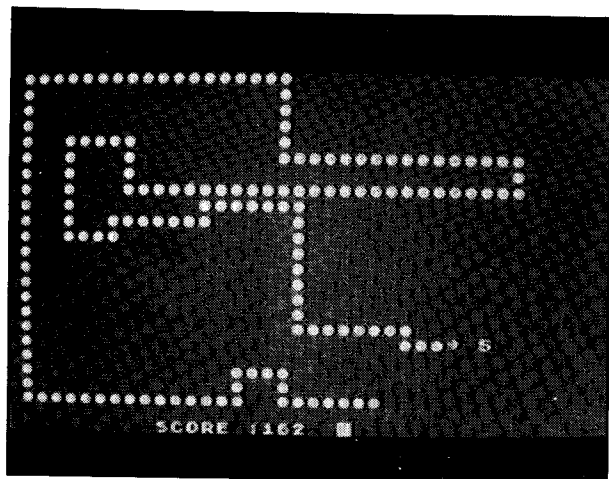
10070 = 1686
 10071 = 1556
 10072 = 1726
 10073 = 1506
 10074 = 1794
 10101 = 1836
 10102 = 1506
 10103 = 1646
 10104 = 1696
 10105 = 1526
 10106 = 1746
 10107 = 1516
 10108 = 1706
 10109 = 1536
 10110 = 1656
 10111 = 1556
 10112 = 1596
 10113 = 1546
 10114 = 1646
 10115 = 1506
 10116 = 1656
 10117 = 1506
 10118 = 1696

10119 = 1516
 10120 = 1696
 10121 = 1526
 10122 = 1706
 10123 = 1476
 10124 = 1794
 10151 = 1836
 10152 = 1536
 10153 = 1636
 10154 = 1626
 10155 = 1616
 10156 = 1676
 10157 = 1606
 10158 = 1666
 10159 = 1606
 10160 = 1636
 10161 = 1656
 10162 = 1656
 10163 = 1616
 10164 = 1646
 10165 = 1576
 10166 = 1616
 10167 = 1646

10168 = 1596
 10169 = 1646
 10170 = 1576
 10171 = 1656
 10172 = 1616
 10173 = 1556
 10174 = 1794
 20000 = 1280
 20020 = 1895
 20030 = 282
 20040 = 262
 20050 = 1022
 20060 = 359
 20070 = 257
 20080 = 390
 20090 = 487
 20110 = 112

TOTAL = 275698

WORMA



CLASSIFICATION: Skill

You must move your worm around the screen for as long as possible. When a number appears, run over it and the tail of your worm will grow longer. The joystick controls the direction of the worms head and pressing the fire button sends the worm in that direction. If your head touches your body then game is over. The objective of this game is to live as long as possible and make the worm grow to the maximum length.

PROGRAMMING SUGGESTIONS

Increase the speed that the worm moves around the board and put fatal obstacles in its path.

Program Variables

AMX()	Amounts to move X
AMY()	Amounts to move Y
BODY	Screen code for body
CHANGE	Flag position change
DROP	Number of times to grow
FRONT	Screen codes for arrows
HEAD	Position of head in array
POS	Screen position of head
POST	Used to put number on screen
SCREEN	Start of video ram
TAIL	Position of tail in array
TYPE	Direction indicator
X()	X coordinates of worm
Y()	Y coordinates of worm

Program Structure

10 -	Jump initialize
100 - 200	Main loop
5000 - 5060	Joystick routine
5200 - 5320	Move routine
6000 - 6050	Random number to screen
10000 - 10070	End of game
20000 - 20170	Initialize

Listing

```
10   POKE 752,2: ? :GOTO 20000
100  POKE 77,0: ZQ=X(HEAD)+40*Y(HEAD)+SCREEN:GOSUB 5000
110  POS=X(HEAD)+40*Y(HEAD)+SCREEN
120  Q=PEEK(POS):IF Q=BODY THEN 10000
130  IF Q>16 AND Q<26 THEN Q=Q-16:DROP=DROP+Q:SCORE=SCORE+Q:
    TEST=0
140  IF CHANGE AND NOT DROP THEN TAIL=TAIL-1:IF TAIL<0 THEN
    TAIL=970
150  IF CHANGE AND DROP THEN DROP=DROP-1
160  POKE X(TAIL)+40*Y(TAIL)+SCREEN,0
170  Z=HEAD+1:IF Z>970 THEN Z=0
180  IF HEAD<>TAIL THEN POKE X(Z)+40*Y(Z)+SCREEN,BODY
181  IF HEAD=TAIL THEN POKE ZQ,0
190  POKE X(HEAD)+40*Y(HEAD)+SCREEN,FRONT(TYPE)
200  IF NOT TEST THEN GOSUB 6000
210  POSITION 10,23: ? "SCORE ▲:";SCORE;" ▲▲";
220  GOTO 100
```

Joystick routine

```
5000  S=STICK(0)
5010  IF S=15 THEN 5200
5020  ON S GOTO 5200,5200,5200,5200,5200,5200,5040,5200,5200,
    5200,5060,5200,5050,5030,5200
5030  TYPE=0:GOTO 5200
5040  TYPE=3:GOTO 5200
5050  TYPE=1:GOTO 5200
5060  TYPE=2:GOTO 5200
```

Move routine

```
5200  CHANGE=0
5210  IF STRIG(0) THEN FLAG=0:REPT=0:RETURN
5220  IF REPT THEN REPT=REPT-1:RETURN
5230  X=X(HEAD):Y=Y(HEAD)
5240  X1=AMX(TYPE):Y1=AMY(TYPE)
5250  X1=X1+X:IF X1<0 OR X1>39 THEN RETURN
5260  Y1=Y1+Y:IF Y1<0 OR Y1>22 THEN RETURN
5270  CHANGE=1
5280  HEAD=HEAD-1
5290  IF HEAD<0 THEN HEAD=970
5300  X(HEAD)=X1:Y(HEAD)=Y1
5310  IF NOT FLAG THEN REPT=6:FLAG=1
5320  RETURN
```

Random number to screen

```
6000 Z=INT(RND(0)*9)+17:IF TAIL=HEAD AND Z=17 THEN 6000
6010 POST=INT(RND(0)*920)+SCREEN
6020 IF PEEK(POST) THEN 6010
6030 TEST=1
6040 POKE POST,Z
6050 RETURN
```

End of game

```
10000 GRAPHICS 2+16
10010 ? #6;"SCORE ▲: ";SCORE
10020 ? #6
10030 ? #6
10040 ? #6;"PRESS ▲<RETURN>"
10050 POKE 754,255
10060 IF PEEK(754)<>12 THEN 10060
10070 CLR :GOTO 10
```

Initialize

```
20000 BODY=84
20010 DIM FRONT(3)
20020 FRONT(0)=92:FRONT(1)=93:FRONT(2)=94:FRONT(3)=95
20040 DIM AMX(3),AMY(3)
20050 AMX(0)=0:AMY(0)=-1
20060 AMX(1)=0:AMY(1)=1
20070 AMX(2)=-1:AMY(2)=0
20080 AMX(3)=1:AMY(3)=0
20090 TYPE=0
20100 SCORE=0
20110 TEST=0
20120 SCREEN=40000
20130 DIM X(970),Y(970)
20140 X(0)=19:Y(0)=12
20150 HEAD=0:TAIL=0:DROP=0:REPEAT=0:TYPE=0
20160 ? CHR$(125)
20170 GOTO 100
```

ChexSum Tables

10	=	549	5210	=	976	10050	=	407
100	=	1972	5220	=	835	10060	=	701
110	=	1406	5230	=	1324	10070	=	180
120	=	1056	5240	=	1397	20000	=	474
130	=	2845	5250	=	1355	20010	=	374
140	=	1744	5260	=	1341	20020	=	2832
150	=	916	5270	=	347	20040	=	742
160	=	1249	5280	=	514	20050	=	979
170	=	1292	5290	=	704	20060	=	1054
180	=	1763	5300	=	1329	20070	=	1111
181	=	596	5310	=	989	20080	=	1058
190	=	1616	5320	=	56	20090	=	286
200	=	447	6000	=	1837	20100	=	280
210	=	1174	6010	=	985	20110	=	281
220	=	112	6020	=	580	20120	=	345
5000	=	471	6030	=	346	20130	=	938
5010	=	502	6040	=	381	20140	=	988
5020	=	3174	6050	=	58	20150	=	1590
5030	=	502	10000	=	282	20160	=	343
5040	=	569	10010	=	853	20170	=	112
5050	=	567	10020	=	174			
5060	=	568	10030	=	174			
5200	=	282	10040	=	1255			
						TOTAL	=	58541

PATROL CAR



CLASSIFICATION: Arcade

Move your little patrol car along the ground and shoot down the hostile invaders and their missiles. Use the joystick to move left and right and the fire button to launch missiles. The aliens can drop nasties on you so beware!!!!

PROGRAMMING SUGGESTIONS

Add obstacles to your patrol cars path to make hitting the alien more difficult. Make it possible for several invaders to attack you at the same time.

Program Variables

X1	X position of patrol car
Y1	Y position of patrol car
A	Joystick variable
X3	X position of alien
Y3	Y position of alien
X2	X position of his missile
Y2	Y position of his missile
X4	X position of your missile
Y4	Y position of your missile

Program Structure

5 -	85	Set up players and draw screen
100 -	130	Data for shapes
1060 -	1560	Main loop
2000 -	2210	Move the patrol car
3000 -	3010	Move the alien
4000 -	4499	Move his missile
5000 -	5999	Move your missile
7000 -	7999	Collision checking

Listing

[illegible]

```

4499 RETURN
4500 Y=INT(RND(1)*120):IF Y<8 THEN 4500
4505 RETURN
5000 REM
5003 IF IT2=0 THEN RETURN
5005 IF Y4<8 THEN IT2=0:Y4=220:RETURN
5010 Y4=Y4-4:RETURN
5500 IF IT2=1 THEN RETURN
5505 X4=X1:Y4=Y1-8:IT2=1:RETURN
5999 RETURN
7000 REM
7010 IF PEEK(53261)=1 THEN BA=BA-1:IT1=0:Y2=220
7020 IF PEEK(53263)=2 THEN BA=BA+1
7030 IF PEEK(53263)=4 THEN BA=BA+1
7999 RETURN
9000 DATA 104,104,104,141,61,113,104,104,141,60,113,104,104,
141,75,113,104,104,141,74
9005 DATA 113,104,104,141,89,113,104,104,141,88,113,104,104,
141,103,113,104,104,141,102
9010 DATA 113,32,45,112,96,120,32,8,113,160,14,162,0,189,53,
113,149,176,232,136
9015 DATA 208,247,32,170,112,160,14,162,0,181,176,157,53,113
,232,136,208,247,160,14
9020 DATA 162,0,189,67,113,149,176,232,136,208,247,32,170,11
2,160,14,162,0,181,176
9025 DATA 157,67,113,232,136,208,247,160,14,162,0,189,81,113
,149,176,232,136,208,247
9030 DATA 32,170,112,160,14,162,0,181,176,157,81,113,232,136
,208,247,160,14,162,0
9035 DATA 189,95,113,149,176,232,136,208,247,32,170,112,160,
14,162,0,181,176,157,95
9040 DATA 113,232,136,208,247,32,22,113,88,96,165,183,197,18
2,240,68,160,0,165,184
9045 DATA 24,105,46,145,176,169,32,24,101,182,168,166,185,16
9,0,145,178,200,202,16
9050 DATA 250,169,32,24,101,183,141,116,113,162,0,142,109,11
3,166,185,172,109,113,177
9055 DATA 180,238,109,113,172,116,113,145,178,238,116,113,20
2,16,237,165,183,133,182,165
9060 DATA 184,133,189,96,165,184,197,189,208,182,96,173,112,
113,41,15,170,189,36,113
9065 DATA 238,112,113,96,160,14,162,0,181,176,157,117,113,23
2,136,208,247,96,160,14
9070 DATA 162,0,189,117,113,149,176,232,136,208,247,96,1,2,3
,4,5,10,7,8
9075 DATA 7,8,11,4,2,4,1,4,8,0,208,0,132,0,120,0,0,0,8,0
9080 DATA 16,0,0,1,208,0,133,20,120,0,0,0,8,0,16,0,0,2,208,0
9085 DATA 134,40,120,0,0,0,8,0,16,0,0,3,208,0,135,60,120,0,0
,0
9090 DATA 8,0,0,0,0,0,0,79,0,0,0,0,0,0,0,0,141,30,208

```

ChexSum Tables

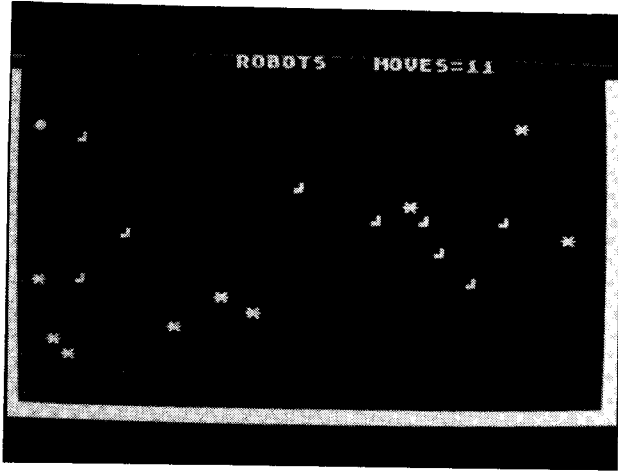
5 = 1421
 6 = 1353
 7 = 1627
 10 = 277
 20 = 1124
 30 = 144
 40 = 420
 50 = 406
 60 = 473
 70 = 372
 80 = 1169
 85 = 361
 100 = 2569
 110 = 2668
 120 = 2534
 130 = 2116
 200 = 371
 210 = 373
 220 = 373
 230 = 375
 500 = 889
 505 = 859
 1030 = 2315
 1060 = 1692
 1500 = 1036
 1510 = 696
 1520 = 1151

1530 = 1275
 1545 = 2286
 1550 = 749
 1560 = 223
 2010 = 1338
 2020 = 463
 2030 = 454
 2040 = 624
 2050 = 58
 2105 = 358
 2110 = 587
 2205 = 422
 2210 = 586
 3005 = 1412
 3010 = 581
 4005 = 428
 4010 = 1768
 4020 = 516
 4025 = 424
 4030 = 590
 4100 = 1396
 4499 = 58
 4500 = 1341
 4505 = 58
 5003 = 302
 5005 = 1107
 5010 = 597

5500 = 367
 5505 = 1408
 5999 = 58
 7010 = 1869
 7020 = 1113
 7030 = 1115
 7999 = 58
 9000 = 3800
 9005 = 3900
 9010 = 3548
 9015 = 3747
 9020 = 3711
 9025 = 3824
 9030 = 3638
 9035 = 3778
 9040 = 3730
 9045 = 3719
 9050 = 3845
 9055 = 4013
 9060 = 3852
 9065 = 3760
 9070 = 3163
 9075 = 2355
 9080 = 2537
 9085 = 2637
 9090 = 2191

TOTAL = 120901

ROBOTS



CLASSIFICATION: Skill

The objective of this game is to move your player round the screen without being destroyed by the robots. Each time you move, all the robots move toward you. You can destroy the robots by causing them to walk over mines which you must avoid yourself. Select a joystick at the start of the game. Try to destroy all the robots in the least number of moves.

PROGRAMMING SUGGESTIONS

Increase the number of robots and mines on the screen. Place obstacles on the screen to make moving more difficult.

Program Variables

MO	Number of moves
SP	Space character
NR	Number of robots
PL	Players character
NM	Number of mines
JO	Joystick port number
SC	Start of screen

Program Structure

120 - 180	Main Loop
1000 - 1099	Initialization
2000 - 2099	Setup game,input joystick number
3000 - 3030	Deposit mines
4000 - 4040	Deposit robots
5000 - 5030	Move player
6000 - 6020	Move player right
6100 - 6120	Move player left

Listing

```
10 REM ROBOTS
20 CLR
21 POKE 752,255
40 SC=40000
60 GOSUB 1000:REM INITIALIZE VARIABLE
70 GOSUB 2000:REM DO INSTRUCTIONS
80 GOSUB 3000:REM DEPOSIT MINES
90 GOSUB 4000:REM DEPOSIT DROIDS
100 GOSUB 5000:REM DEPOSIT PLAYER
```

Main Loop

```
120 A=STICK(J0):B=STRIG(J0):IF A=15 AND B=1 THEN 120
130 IF A=7 THEN GOSUB 6000
140 IF A=11 THEN GOSUB 6100
150 IF A=13 THEN GOSUB 6200
160 IF A=14 THEN GOSUB 6300
165 POSITION 0,0:PRINT SPC$(1,30);MO;
170 IF B=0 THEN POKE PO,SP:GOSUB 5000
180 GOSUB 8000:GOTO 120
```

Initialization

```
1000 SETCOLOR 4,7,5:SETCOLOR 2,3,6:SETCOLOR 1,3,15
1010 DIM TAB(10,2),E(10),SPC$(40)
1020 NM=10:REM SET NUMBER OF MINES
1025 PL=84:REM SET PLAYER CHAR
1030 ROB=67
1035 MIN=10:REM SET MINE CHAR
1040 NR=10:REM SET NUMBER OF ROBOTS
1050 SP=0:REM SET SP CHARACTER
1060 EX=17
1070 FOR I=1 TO 40:SPC$(I,I)=">":NEXT I
1099 RETURN
```



```

5000 R=INT(RND(0)*23):IF R=0 THEN 5000
5010 C=INT(RND(0)*39):IF C=0 THEN 5010
5015 PO=SC+(R*40)+C
5020 IF PEEK(PO)=MIN THEN 5000
5025 IF PEEK(PO)=ROB THEN 5000
5030 MO=MO+5:POKE PO,PL:RETURN
6000 REM MOVE PLAYER RIGHT
6005 IF C=38 THEN RETURN
6006 MO=MO+1
6007 C=C+1:PE=SC+(R*40)+C
6010 IF PEEK(PE)=ROB THEN GOSUB 9000:GOTO 10
6012 IF PEEK(PE)=MIN THEN GOSUB 9500:GOTO 10
6020 POKE PO,SP:POKE PE,PL:PO=PE:RETURN
6100 REM MOVE PLAYER LEFT
6105 IF C=1 THEN RETURN
6106 MO=MO+1
6107 C=C-1:PE=SC+(R*40)+C
6110 IF PEEK(PE)=ROB THEN GOSUB 9000:GOTO 10
6112 IF PEEK(PE)=MIN THEN GOSUB 9500:GOTO 10
6120 POKE PO,SP:POKE PE,PL:PO=PE:RETURN
6200 REM MOVE PLAYER DOWN
6205 IF R=22 THEN RETURN
6206 MO=MO+1
6207 R=R+1:PE=SC+(R*40)+C
6210 IF PEEK(PE)=ROB THEN GOSUB 9000:GOTO 10
6212 IF PEEK(PE)=MIN THEN GOSUB 9500:GOTO 10
6220 POKE PO,SP:POKE PE,PL:PO=PE:RETURN
6300 REM MOVE PLAYER UP
6305 IF R=1 THEN RETURN
6306 MO=MO+1
6307 R=R-1:PE=SC+(R*40)+C
6310 IF PEEK(PE)=ROB THEN GOSUB 9000:GOTO 10
6312 IF PEEK(PE)=MIN THEN GOSUB 9500:GOTO 10
6320 POKE PO,SP:POKE PE,PL:PO=PE:RETURN
8000 REM MOVE ROBOTS
8020 CC=0:FOR I=1 TO NR
8030 IF E(I)=1 THEN GOSUB 8500:CC=CC+1
8040 NEXT I
8050 IF CC=0 THEN GOSUB 9900:GOTO 10
8060 RETURN
8500 REM MOVE ONE ROBOT
8505 RW=TAB(I,1):CW=TAB(I,2):PE=SC+(RW*40)+CW
8520 IF CW<C THEN TC=CW:TC=TC+1
8525 IF CW>C THEN TC=CW:TC=TC-1
8530 IF RW<R THEN TR=RW:TR=TR+1
8535 IF RW>R THEN TR=RW:TR=TR-1
8540 PN=SC+(TR*40)+TC
8545 IF PEEK(PN)=MIN THEN POKE PN,SP:POKE PE,SP:E(I)=0:RETUR
N
8550 IF PEEK(PN)=ROB THEN RETURN
8560 IF PEEK(PN)=PL THEN GOSUB 9000:GOTO 10
8570 TAB(I,1)=TR:TAB(I,2)=TC:POKE PE,SP:POKE PN,ROB:RETURN
9000 REM THE ROBOTS GOT YOU
9005 PRINT CHR$(125);:PRINT "YOU ▲WERE ▲CAPTURED ▲BY ▲THE
▲ROBOTS !!!!!"
9010 PRINT :PRINT "YOU ▲MADE ▲";MO;" ▲MOVES"
9012 CC=0:FOR I=1 TO NR:IF E(I)=0 THEN CC=CC+1
9013 NEXT I
9015 PRINT :PRINT "AND ▲DESTROYED ▲";CC;" ▲ROBOTS"

```

```

9020 GOSUB 10000:RETURN
9500 REM PLAYER HIT A MINE
9505 PRINT CHR$(125); "YOU ▲ HIT ▲ A ▲ SUBATOMIC ▲ MINE"
9510 PRINT :PRINT "YOUR ▲ MOLECULES ▲ ARE ▲ NOW ▲ ORBITING ▲ THE"
9512 CC=0:FOR I=1 TO NR:IF E(I)=0 THEN CC=CC+1
9513 NEXT I
9515 PRINT :PRINT "EARTH!!!!":PRINT
9520 PRINT "YOU ▲ MADE ▲"; MO; " ▲ MOVES":PRINT
9525 PRINT "AND ▲ DESTROYED ▲"; CC; " ▲ ROBOTS":GOSUB 10000:RETURN
9900 REM ALL ROBOTS GONE
9905 PRINT CHR$(125); "YOU ▲ HAVE ▲ DESTROYED ▲ ALL ▲ THE ▲ ROBOTS":
PRINT
9910 PRINT "IT ▲ TOOK ▲ YOU ▲"; MO; " ▲ MOVES":PRINT
9915 GOSUB 10000:GOTO 10
10000 PRINT :PRINT "PRESS ▲ JOYSTICK ▲ TRIGGER ▲ TO ▲ RESTART ▲ GAME"
10005 B=STRIG(JO):IF B=1 THEN 10005
10010 RETURN

```

ChexSum Tables

20 = 40	3020 = 1026	6310 = 962
21 = 405	3025 = 684	6312 = 968
40 = 333	3030 = 617	6320 = 1211
60 = 1751	4000 = 465	8020 = 777
70 = 1457	4007 = 581	8030 = 1379
80 = 1291	4010 = 1240	8040 = 175
90 = 1381	4015 = 1269	8050 = 682
100 = 1405	4020 = 1026	8060 = 58
120 = 1916	4025 = 709	8505 = 2688
130 = 516	4030 = 708	8520 = 1360
140 = 527	4035 = 1607	8525 = 1362
150 = 530	4040 = 358	8530 = 1360
160 = 532	4050 = 175	8535 = 1362
165 = 881	4060 = 58	8540 = 1044
170 = 796	5000 = 1246	8545 = 1937
180 = 406	5010 = 1286	8550 = 606
1000 = 1204	5015 = 1019	8560 = 967
1010 = 1258	5020 = 696	8570 = 2532
1020 = 1861	5025 = 695	9005 = 2855
1025 = 1703	5030 = 954	9010 = 1379
1030 = 442	6005 = 427	9012 = 1877
1035 = 1423	6006 = 503	9013 = 175
1040 = 1959	6007 = 1602	9015 = 1857
1050 = 1573	6010 = 962	9020 = 187
1060 = 365	6012 = 968	9505 = 2046
1070 = 1460	6020 = 1211	9510 = 2679
1099 = 58	6105 = 372	9512 = 1877
2000 = 253	6106 = 503	9513 = 175
2026 = 253	6107 = 1603	9515 = 765
2027 = 2256	6110 = 962	9520 = 1379
2028 = 661	6112 = 968	9525 = 2028
2029 = 748	6120 = 1211	9905 = 2822
2030 = 1549	6205 = 404	9910 = 1612
2040 = 2200	6206 = 503	9915 = 262
2050 = 319	6207 = 1600	10000 = 2915
2060 = 1173	6210 = 962	10005 = 984
2070 = 2114	6212 = 968	10010 = 58
2099 = 58	6220 = 1211	
3000 = 461	6305 = 371	
3007 = 1215	6306 = 503	
3010 = 1248	6307 = 1601	
		TOTAL = 127177

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